CREATIO CONTINUA:

A RELATIONAL REALITY AS ARTICULATED IN PROCESS THEOLOGY, NATURAL SCIENCE, AND THERAVADA BUDDHISM

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Hkawn Nu

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This Dissertation completed by

HKAWN NU

has been presented to and accepted by
the Faculty of Claremont School of Theology
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Faculty Committee

Dr. Philip Clayton

Dr. Roland Faber

Dr. Victor Gabriel

Dean of the Faculty

Dr. Andrew Drietcer

May 2022

ABSTRACT

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HKAWN NU

This dissertation focuses on the deepest connections between Christianity, Natural Science, and Theravada Buddhism. I will argue that process-relational philosophy helps bring out different dimensions in each of these three traditions—one science, and two religions. For this reason, process-relational philosophy is uniquely effective in bridging between the three different domains: Christianity, Natural Science, and Theravada Buddhism. One might think of the following chapters as a trialogue between the three, one based on an organically co-relational concept.

Each of the three major chapters will examine a particular use of process-relational philosophy. The uses are similar, but *not* identical.

First, in chapter four I offer an interpretation of the Christian doctrine of continuing creation from a process perspective. The central idea of this interpretation of the doctrine of creation is an "interrelated on-going becoming phenomenon out of the co-related condition" called creativity and composed of one and many. Every creature, both living and non-living, mental and physical, divine and evil, is becoming due to the relations of the potentialities of past and present for an open future. All things are relational. The strong point of process thought is the relational quality which enables it to go beyond and build a bridge between Christianity and Buddhism. Through the quality of inter-relationality, continuing creation is organically connected to Natural Science.

In chapter five, we turn to natural science. The philosophy of science that I bring to this task is based on the process philosophy of Alfred North Whitehead. The particular scientific disciplines that we will examine are cosmic evolution as presented in contemporary physics and biological evolution. What we learn from interpreting these two scientific fields using process philosophy is that existence is characterized by an "interactively co-evolving process of energy." Evolutionary history shows that everything evolves from the tiniest events to gigantic matters, visible and invisible. All of these happen because of interactive relationality. Due to the interconnectedness of scientific laws and theories, we find that evolving entities are relational. Again, the powerful point of process thought is the interactive and relational quality which enables us to go beyond and build a bridge between East and West.

Finally, we turn to Theravada Buddhism in chapter six. It turns out that the central notion of "interdependent co-arising," or *paticcasamuppada* beautifully manifests process-relational thinking. In fact, Western and Christian scholars have much that they can learn from the Theravada Buddhists about what a deeply processive and relational worldview looks like. Buddhist teachings about *paticcasamuppada* manifest process-relational thinking: in the interactive karmic field of force, every life event, either divine or miserable (from *Nibbana* to *Apaya*), flickering consciousness or enormous universes, seen or unseen, are interdependently arising and ceasing out of causal conditions. In the interdependency, the past causes the present to determine the arising future. Most important of all, co-arising events are relational.

What we learn in these three chapters is that process-relational philosophy helps scholars and practitioners to recognize common patterns of thought between scientific thinking and two of the world's great religious traditions. Indeed, one may come to see these three as inseparably related cousins. It does *not* follow that the religions become science, or that a symbol of twins

show that Christian doctrine of creation is *identical to* "interdependent co-arising" in the Buddhist tradition. Indeed, important differences remain. However, one *does* recognize some common patterns between these traditions, which allow us to speak of some harmonious relations between them.

To my beloved Mom (Ah Nu)

Hkangda Tawm

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INTRODUCTION

Living together by learning from each other builds a peaceful society for all non-living and living entities because there is a divine and dynamic uniqueness with/in interactions. Indeed, it is the ground for our age of rapid globalization.

I write this dissertation with the aspiration and inspiration of the unique chance experienced and enriched by living in the multiplicities of differences, such as in religion, race, culture, and language. There are estranged gaps and gulfs of complex -isms and systems constructed from closed mindsets and mental models. These have resulted in varieties of fragmentation happening in long lasting, confused, and conflicted experiences in the closed society of Myanmar. Actually, this country has the longest civil war of any country in the world since World War II, and the situation is critically reconsidered. I, as a victim, have grown up among bunkers, flying bullets, and bombardments. Being thirsty and hungry for days, with sleepless nights and speechless moments facing the muzzles of guns, still remains in my memory. Such dilemmas and tragic experiences have molded me to explore a mode of thought open to looking toward and learning from each other. Moreover, in glocalizing and globalizing, it has become clear that problems and issues are interconnected to each other such as is described by meteorological scientist Edward Lorenz's "butterfly effect." For example, it is implied that global warming changes the sea level which consequently affects the lives of those inhabiting low-lying islands and coasts. Additionally, for instance, when there is a conflict between Buddhists and Muslims in Arakhan State in Myanmar, Burmese workers in Malaysia are killed

and Burmese Buddhist monasteries in Gaya, India are bombarded. (This occurred in 2012.) Nothing is separated in this multi-universe, but relatedly occurs.

Furthermore, looking to political crises and situations leads us to realize that there have been violations against human rights and geo-politics, as well as other injustices, such as ethnic cleansing, poverty, gender inequality and discrimination, violence against women and children, environmental deterioration, and inhumane economic exploitation. (Due to another and recent military coup and *junta* in Myanmar on February 1, 2021, massacres and atrocities continue to occur all over the country.) Similar events and experiences also happen across and to the world. Thousands of lives are intentionally and unintentionally scapegoated with/in in mechanistic, patriarchal, and hierarchical systems of closed and selfish mindsets which come out of mental models built up by fixed, static, analytical, and Western style concepts of reductionism and determinism. As a result, countless lives are ended with fears and tears, inferiorities and insecurities, starvation and sighs, suffering and sadness, brokenness and bruises, crying and dying, angers and agonies with silent languages everywhere and in every moment.

Based on these issues and conflicts, it is seen that nature becomes the most affected—creation is groaning in crisis and turmoil. The root cause of severely damaging the environment in all parts of the world is primarily the ignorant and selfish greed and deeds of human beings (even though there are natural "evils"). The problems include loss of biodiversity, the endangering of species, and increasing global temperatures; these must be considered in terms of how they affect whole societies of the world. When addressing societal issues and the environmental crisis, there is an unavoidable destiny faced by the church to address them co-operatively with others by going beyond the barriers and boundaries of estrangement. In other

words, it is necessary to co-find solutions. The nurturing cradles or religious elements are to be re-considered and re-examined together with other faiths and traditions. Therefore, creation[1] is first and foremost the matter for Christians to reconsider vis-à-vis the revelation of God in this changing age of globalization precisely because new ways of thinking make new mindsets possible. These mindsets change our mental models and construct new systems for (re)building a more ecologically harmonious *oikos* which is sustainable into the future.

In this age of global ecological crisis, peoples' thinking—regardless of their faith and/or tradition—needs to be criticized if we are to move out of our comfort zones in order to interact so as to develop a global common goal in reconstructing a better world. For instance, the Christian concept of *creatio ex nihilo* is criticized in as much as it produces problems, makes them widespread, and is generally not useful.[2] Christians instead need to affirm the concept of *creatio continua*. Likewise, mechanistic views of science or the Newtonian age of science turns into an organic concept of science or Einsteinian age of science. Some humbly critical questions lay out whether the great and divine *Abhidhamma* is interactively and organically described with other different religious teachings organically by Theravada Buddhists, although the core teaching of Buddha (or *Abhidhamma*) is an interactive web or network of *Kamma*. Is it boxed or locked in a limited space? Is *Abhidhamma* influenced by a mechanistic concept of Newtonian science which molds military systems rooted in Myanmar's soil for a long time, creating the longest civil war in any country since World War II, leading to several military coups, and to the destruction of the land and people of Myanmar such that it makes the richest country in

[1] When I say "creation," the notion of a "creator" is assumed.
[2] This will be discussed in detail within the dissertation.

Southeast Asia into the poorest among the poorest and effects the others or world directly or indirectly? Indeed, precious things are not to be locked in the treasure box of a country but are to be shared with the others for the sake of its authentic richness and the betterment of the world. One of my greatest, most sincere, and expected desires after this project is to develop organically interactive works with other faith traditions, such as my friends among Theravada Buddhists.

This dissertation presents an argument and defense of the Christian doctrine of creation only from the stand-point of a Protestant Christian. It will argue that the doctrine of *creatio ex nihilo*, or creation out of absolute nothingness, is problematic because it is one of the chief sources of personal, societal, and global problems. I will consistently defend the ecologically useful concept of *creatio continua* as the means finding a solution for these crises. After being traced through the era when Christianity was born, together with the theologies of the early church Fathers, continuing creation will be analogically and relatedly defended from the standpoint of Alfred North Whitehead's process-relational philosophy vis-à-vis three different traditions: Christianity, Natural Science, and Theravada Buddhism.

In chapter one, I will critically engage the doctrine of *creatio ex nihilo*. I will argue that this concept is not the belief of Judaism, the original religion out of which Christianity was born, nor the primary theology of the Patristic Fathers. I will demonstrate that the concept does not originate from the church but is a misinterpretation due to the work of a few unthoughtful and narrow thinkers who were rushed, wishing to critique Platonism, dualism, gnosticism, and Marcionism. This unorganized but rooted thought with/in in the space of closed Christian thinkers is the main source of the world's problems. This fixed concept of creation out of absolute nothingness forms the idea of a static God—the One creator who creates all things by

Himself alone, rules alone according to unchangeable systems and structures with coercive, mighty, and unilateral power: *He* chooses, favors, excludes, separates, punishes, or rewards and so on, all of which leading to destructiveness.[3] Due to such matters, the God of *creatio ex nihilo* is responsible for all evils in the world. This mechanistic concept of creation out of absolute nothingness is also contrasted against and causes problems for Theravada Buddhism which does not have similar concepts of such creation and creator.

In chapter two, I defend *creatio continua* (continuing creation) to find a way of solving those problems in order to ecologically and harmoniously co-indwell with others. The original background of Judaism will be resourced because Christianity takes the belief of continuing creation from it. It will be affirmed that the concept is original to Judaism. I will also search the early period of Christianity and the theologies handed down and held by the early church fathers. The two prominent schools—Alexandrian and Antiochene schools—are crucially and carefully studied because their traditions remain influential today. Standing on the Alexandrian tradition, an interactive way of co-living in harmony, with recognition and respect for others in the daily experience of lives of that age will be explored. Maintaining the validity of the theological legacy, I will discuss the belief of continuing creation which births the concept of a co-creating God and co-suffering God who models how to live together with others. Christianity will also find cousins in this endeavor—Natural Science and Theravada Buddhism. Thus, I will explain the ecologically and ecumenically oriented concept of continuing creation in analogically and organically relational ways in the following three chapters.

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[3] The use of male pronouns here is intentional, given that the Creator *qua creatio ex nihilo* is typically conceived of as male.

Chapter three will start continuing creation. It will be explained according to Whitehead's process-relational philosophy. After giving a short introduction to process philosophy and theology, I will closely examine "creativity" in Whitehead's metaphysics, arguing that it is crucial for Christian thought on continuous creation. The termed "creativity" can be seen as the World constituted as the One and the Many. To have a thorough understanding of creativity as continuing creation, its related components and constituents are going to be explored because it is an interconnected complex of co-conditioned potentialities from which inanimate and animate creatures become. The meaning of "prehension," which is key to the functioning roles in creativity, will be examined with its co-relative concepts of "feelings," "eternal object," "actual entity" and "actual occasion," "concrescence," and "nexus." Prehension with the meaning of "relation" betwixt, between, and beyond will be seen as making the quality of relations. Self-organization will be found to be the prime characteristic of creativity and continuing creation. Interestingly, the God of process is conceived as one who is co-indwelling with the World as a result of being understood as "dipolar," that is as having both primordial and consequent natures. Grounded on process thought's notion of creativity, I will describe a Christian process-relational interpretation of continuing creation. The reader will understand that God is an interrelated God of Love, or a Trinitarian Relational God of Love in which/whom all non-living and living creatures are becoming, moving, and living together with/in God and others. It will then be shown that the powerful point of process thought is the relational quality which enables Christian theology to organically go beyond and bridge between each other. Through the quality of inter-relationality, continuing creation will be connected to Natural Science.

Chapter four will explain the theology of continuing creation from the perspective of Natural Science. Since the foundation of this dissertation is process-relational philosophy, the evolutionary process of science easily supports an understanding of Whitehead's thought vis-à-vis creativity. Indeed, there is a deep connection between Whitehead's metaphysics and Natural Science. I will thus describe the assumption of the interconnected methods and theories of science. Grounded on these methods and theories, I will analyze the discoveries of cosmic and biological evolutions, as well as neuroscience. Related to Einstein's theory of relativity, the uni-multiverse is evolving along with the four fundamental forces of gravity, electromagnetism, and the strong and weak nuclear forces. The characteristic of self-formation occurs in the process of evolution. Information will be seen as the communicating player in science. it is noted that continuing creation is not a scientific term but a theological term; however, the reader will see in the theory symbolized by "$E=mc^2$" that, the evolving phenomenon of animate and inanimate things, and the phases of science resulting from interactive information, are similar to creativity—the interconnected and processual condition of potentialities out of which non-living and living creatures are continuously becoming forever.

Due to the analogical argument, one will understand that there are important similarities between them. I will reiterate that the strong point of process thought is the relational quality which enables us to go beyond and build a bridge between East and West. Through the quality of inter-relationality, continuing creation is again organically connected to Theravada Buddhism. Thus, the concluding part of this chapter will open the door between Natural Science and Theravada Buddhism. The key similarities between them are highlighted: interactive and communicative information, four fundamental forces, vacuum energy or Einstein's relativity

symbolized "$E=mc^2$" and the interactive *kammic* field of force, four pure or fundamental elements characterized as air, water, fire, and earth, and nibbana.

Chapter six will be about the notion of continuing creation as seen in Theravada Buddhism. Given that process-relational philosophy is the deepest foundation of this dissertation, Theravada Buddhism may probably be the most process-relational religion in the world because the process-relational idea in Theravada *Abhidhamma* is perhaps clearer and easier to conceive than the process-relational thought of Whitehead.[4] I will analyze the law of *paticcasamuppada* (viz, the interdependent and endless condition) which is the non-linear process of causes and conditions from which all sentient and non-sentient beings are arising and perishing. Theravada *Abhidhamma* philosophy is event-oriented. It starts its scrutinizing of experience from the interconnected and quickest flickering moment of consciousness and mental factors. I will examine how mentality (*nama*) and physicality (*rupa*) jointly support an aggregated organism of organisms or systemic societies of societies. The four pure and basic elements (*dhatu*) will also be observed. Readers will learn that even *Nibbana* is an interdependent co-arising state of mind and body for an enlightened one. *Kammic* interaction will be explored as it is taking the main functional role in *paticcasamuppada*. Self-determination or responsibility will be noticed as the core characteristics of Theravada Buddhism for good or ill. Again, continuing creation is not a Buddhist but a Christian term; however, readers will see how the concept that non-sentient and sentient beings are arising and decaying in the law of *paticcasamuppada* through *kammic* interactions is similar to the idea that inanimate and animate beings are also becoming out the

[4] Honestly, I did not fully understand the complexity of Whitehead's metaphysics in *Process and Reality* when I first started reading it; however, I actually came to understand it when I looked through the eyes of Theravada *Abhidhamma.*

interconnected complex causal nexus or co-condition of creativity in process thought. Moreover, due to my comparative argument in this dissertation, readers will see that there are crucial and internal connections and similarities (without discounting the differences) between them.

In the concluding remarks, readers will find an interesting process-relational theology of *creatio continua* across the three different traditions of Christianity, Natural Science, and Theravada Buddhism. In this relational trialogue, continuing creation is discerned through the lens of process-relational philosophy. Creativity in Whitehead's thought will be analogically understandable as relativity with the process of evolution in science, which is also similar with the law of *paticcasamuppada* in Theravada Buddhism. I will make known to readers that this dissertation is an organically relational way of bridging between and beyond by recognizing and respecting the values and identities of my interlocutors. The reader will enjoy observing the wisdom of continuing creation shown by and with/in the three different traditions because of how they commonly show that inanimate and animate beings are becoming through interactive relations. Last but not least, this interactive work will give readers the spirit and wisdom of the familial co-indwelling of a harmonious society of societies.

CHAPTER ONE

BUDDHISM AND CHRISTIANITY IN CONFLICT: *PATICCASAMUPPADA* AND *CREATIO EX NIHILO*

Creatio ex Nihilo is not useful because its traditionally classical God, power, and system are opposed to the Buddhist's tradition of *Paticcasamuppada*. What is more, it cannot reasonably solve the problem of evil. In this chapter, I will argue that *creatio ex nihilo,* together with its related background and concepts—God, system, mental model, power, and the problem of evil—are in direct contrast against the Buddhist understanding of creation. To do so, I will, first, provide an introduction to the notion of *paticcasamupada* as described by Theravada Buddhism.

A. Paticcasamuppada in Theravada Buddhism

This section describes the contrast between Buddhism and Christianity. There are conflicts because Christians see the world through the concept of *creatio ex nihilo* while Theravada Buddhist discerns the nature/reality through *paticcasamuppada*.

Theravada Buddhist philosophy is called *Abhidhamma,* which is also the supreme teaching of the Buddha. Buddhists call it "The Philosophy of Life."[1] It has a variety of dimensions: metaphysical, ethical, religious, systematic, systemic etc. Moreover, it is also called the Ultimate Science. In other words, it is called the science of the ultimate truths or realities. What matters most is that they see and discern all sentient and non-sentient entities through

[1] Hla Myint, "Buddhism as a Philosophy of Life," *Engagement: Judson Research Center Bulletin*, no. 11 (December 2009): 88.

Mind. They believe that all entities are seen as the products of Mind. So, they call *Abhidhamma* a mental science.[2]

As there are ultimate realities/truths and conventional realities/truths, the law of *paticcasamuppada* is one of the ultimate truths.[3] Through this law, Theravada Buddhists analyze natural phenomena or the way things are arising and perishing. (This is effectively the Buddhist concept of creation.) *Paticcasamuppada* describes the conditionality and interdependent nature of the constant and continuous flux of manifold physical and mental phenomena.[4] Through this law, every entity, like the quantum uncertainty of a wave-particle, is seen as an event according to the principle of impermanence and causality in the continuous dynamic flux of space-time. Buddhism teaches that time is a psychological concept which is irreversible, and space as emptiness is a receptacle for the existence and movement of material phenomena. Every entity interdependently arises and ceases to be within a network of causes and conditions. This Buddhist notion of interdependence, similar to what Neils Bohr describes as the "principle of complementarity," is the notion of interaction or relation and is the nature of reality, like the relationship between observer and the observed. Buddhism also sees reality as *nibbana* or emptiness. Just as nothing can exist without space, so too can nothing exist without emptiness. Similarly, science has discovered that the empty space of a vacuum actually contains energy which plays a role in cosmic evolution. The whole process of the world, in Buddhism, is catalyzed by *kammic* energy or inter-actions.[5]

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[2] Mehm Tin Mon, *The Essence of Buddha Abhidhamma: Presenting the Essential Teaching of the Buddha in Terms of Ultimate Realities*, 2nd ed. (Yangon, Myanmar: Mehm Tay Zar Mon, 2010), 6.

[3] I will go into greater depth regarding *Paticcasamupada* in the last chapter.

[4] Mon, *The Essence of Buddha Abhidhamma*, 236.

[5] Ankur Barua, "Dependent Origination and Relativity," *Applied Buddhism* (blog), October 14, 2009, http://introductiontoappliedbuddhism.blogspot.com/2009/10/dependent-origination-and-relativity.html. Trinh Xuan Thuan, "Science and Buddhism: Two Complementary Modes of Knowledge," in *The Boundaries of Knowledge in Buddhism, Christianity, and Science*, ed. Paul D. Numrich (Göttingen, Ger.: Vandenhoeck & Ruprecht, 2008), 29.

The law of *paticcasamuppada* is opposite to Christian concept of creation because Buddhism, thus, does not accept creator and creation. Buddhist scholars say that

> the Creator myth is condemned by the Buddha. Creation connotes a beginning. In the Buddha Dharma [or Dhamma in Pali] there is no known beginning. Before the beginning what was the Creator doing, and where did he live? A condition of things where there is no water, earth, air, heat, light, and space is unthinkable. If God rested on the waters who created the water, and if God created the water, where did he live before?
>
> Uncultured people are always very credulous. . . .
>
> Neither the authors of the creator myths nor the people to whom these myths were proclaimed knew anything of the formation of the earth by slow degrees. Geology and astronomy they knew not. Muddleheaded they were; and ignorant people were made victims of priestly selfishness.[6]

> Speaking of deity in the sense of a Supreme Creator, Buddha says that there is no such being. Accepting the doctrine of evolution as the only true one, with its corollary, the law of cause and effect, he condemns the idea of a creator and strictly forbids inquiry into it as being useless.[7]

Moreover, a Patriotic Theravada Buddhist monk from Burma (Myanmar) Ashin Egga Dhamma (Nikhamma) outspokenly entitles his recent publication *Phansinshin mashì thaw kabar nè phonegyi wut khè thaw Yeshu* (in Burmese) which means The *World Without Creator and the Buddhist Monastic Life of Christ Jesus* (in English) in 2016.[8]

Additionally, the ultimate reality *Nibbana* is also different from the Christian creator. Christopher Gowans posts a comparative view between the creator God and *Nibbana*:

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[6] Anagarika Dharmapala, *The Arya Dharma of Sakya Munu, Gautama Buddha: Or the Ethics of Self Discipline* (Calcutta: Maha Bodhi Book Agency 1917, repr. 1989), pp. 68f and 76; quoted in Perry Schmidt-Leukel, "Introduction," in *Buddhism, Christianity and the Question of Creation: Karmic or Divine?* edited by Perry Schmidt-Leukel (NY: Ashgate Publishing, 2006), 8.

[7] Anagarika Dharmapala, "The World's Debt to Buddha," *The Dawn of Religious Pluralism: Voices from the World's Parliament of Religions, 1893*, ed. R. H. Seager (LaSalle: The Open Court 1993), 417; quoted in Schmidt-Leukel, *Buddhism, Christianity and the Question of Creation,* 8.

[8] Ashin Egga Dhamma (Nikhamma), *Phansinshin mashì thaw kabar nè phonegyi wut khè thaw Yeshu* [The world without a creator and the monastic life of Christ Jesus], Buddhist Patriotic Society Series, no. 1 (Yangon: Mijjhima Patipada Sahpye, 2016). Reprinted four times in the same year, this book is directly reflective of a literal reading of the Christian Bible; as such, it is a direct and stern response to such a literal interpretation. It is also a fierce reaction to the traditional preaching of Christian pastors, especially for salvation, whose thoughts are stuck in *creatio ex nihilo* and its related concepts.

> As we saw…. *Nibbana* is transcendent reality in the broad sense of the term: it is beyond the ordinary world of sense-experience and may be approached only via meditation. But the differences are quite significant. The most important are that, unlike God, Nibbana is not the ultimate cause of the universe, and it is not a personal being, who is omnipotent, omniscient, and all-loving. Hence, it is not a reality on which human beings depend or with whom they could form a personal relationship.[9]

Opposition between Christianity and Theravada Buddhism regarding the concept of creation causes problems leading to enmity between the two groups. No matter how much the interreligious workers try to build peace between these two groups in other ways which are based on traditional Christian concept of *creatio ex nihilo*, it is impossible because their views are apparently irreconcilable. Therefore, to know the root and tradition of such Christian creator and creation which is thorny to Buddhism, it is important to trace the history of the doctrine, stemming from the debates within the early church.

B. *Creatio Ex Nihilo*: The Work of Some Early Church Fathers

The main reason for this section is to know the original background and how *creatio ex nihilo* was created and arose in the faith space of Christianity. The fundamental point of opposition between Christianity and Buddhism is the classical Christian notion of creation—*Creatio ex nihilo*, which means "creation out of nothingness" (alternatively, "creation out of absolute nothingness"). Many Christian thinkers have been interpreting and redefining this fixed term. Thomas Aquinas, a prominent Christian philosopher, church father and theologian, affirmed *creatio ex nihilo* by stating that "nothing was presupposed to God's creative act, not matter, forms, natures, essences, ideas, laws of nature, or a hierarchy of being. The creature

[9] Christopher Gowans, *Philosophy of the Buddha* (New York: Routledge, 2003), 152; quoted in Schmidt-Leukel, *Buddhism, Christianity and the Question of Creation*, 3.

depended entirely on God's creative act."[10] This doctrine was a primary influence for the classic Christian concept. It has been firmly rooted in Christian belief and has become the most popular Christian doctrine. This concept of creation was formulated by Christian patristic thinkers in the second century. Chronologically, this concept arose in the era when the new religion Christianity was evolving from Judaism by interacting with and being influenced by the civilization(s) of the Classical Near East. In other words, it was the formative period of Christian identity within the complexity of multiplicities: religions, philosophies, cultures, economics, politics, etc.

The doctrine of creation was originally inherited from Judaism. Indeed, concomitant with such a basic belief of Christianity as "the doctrine of creation" was the urgent need and controversial matter of the major problem in formulating Christianity's own identity among the others. As a newborn religion, Christianity formulated its identity by primarily interacting with Greek philosophy because the Greeks were politically, culturally, economically, and systemically strong and dominant in the Roman Empire.[11] Moreover, Christians wanted to understand "how to reconcile the idea of God who creates freely and unconditionally with the concepts of Greek metaphysics."[12] In the fallout of the conceptually chaotic and creative time

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[10] James Noel Hubler, "Creatio ex Nihilo: Matter, Creation, and the Body in Classical and Christian Philosophy Through Aquinas" (PhD diss., University of Pennsylvania, 1995), v.

[11] When thinking about the concept of creation, the notion of matter as derived from Greek philosophy is key. Hubler summarizes the teachings on matter. First, Plato—thought of it in terms of a receptacle or space which provides the state for change which happens among spatially distended images of the forms. Physical matter as we know it is the geometrical ordering of these images. Second, Aristotle—viewed matter as substance in potency. So-called "Prime matter" is the analysis of the elements as they have the potency to transform one into another. Third, the Stoa thought of—matter as the characterless substance of the world, subject to different properties, such as heat, cold, wetness, dryness, etc. Finally, Middle-Platonism thought of—matter as body in potency. See Hubler, "*Creatio ex Nihilo*," 69-70.

[12] Gerhard May, *Creatio Ex Nihilo: The Doctrine of Creation out of Nothing in Early Christian Thought*, trans. A. S. Worrall (NY: T&T Clark International, 2004), 2.

known as the Axial Period,[13] Platonism was the most influential, popular, and productive school of Greek philosophy. This gave it a decisive cultural role in the Mediterranean.[14] Stoic teachings also affected Christianity and how it constructed its theology of creation, "especially through its ethics (personal ethics), but also its teleological proof of God and its anthropocentric teaching about providence,"[15] though Christians did criticize Stoicism's pantheism, materialism, and other teachings (such as the concept of the periodic renewal of the world).

The reasons why the doctrine of *Creatio ex nihilo* arose in the young religion are varied. According to the influence of Greek philosophy, first and foremost, the ideas of Plato and Middle Platonism are mainly concerned.[16] Plato (428-348 BCE) taught that there is a divine and permanent world of "forms" above and beyond the world. He believed that all things in the world around us are shadows and images of these eternal real things, and that ideas only exist in the divine world wherein is ultimately found the Good. For instance, there is a form of "House" behind houses, a form of "Tree" behind trees, etc. Human souls are the fallen deities trapped in

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[13] This period was from about the eighth to the third century BCE when new ways of thinking appeared in Persia, China, and the Greco-Roman world, especially in religion and philosophy. Many different schools of thought arose as did new thinkers such as Confucius and Lao-Tse in China, the Upanishads and Buddha in India, the Hebrew prophets Isaiah, Jeremiah to Duetero-Isaiah in Israel, Homer, Parmenides, Heraclitus, and Plato in Greece. Wikipedia, s.v. "Axial Age," last modified November 16, 2021, 22:48 (UTC), https://en.wikipedia.org/wiki/Axial_Age.

[14] Stoicism, a Hellenistic philosophy, was founded by Zeno of Citium in Athens in the early third century BCE. It is a philosophy of personal ethics informed by a system of logic and its view of the natural world. According to its teachings, the path to eudaimonia (happiness or blessedness) for social beings is found in accepting the moment as it presents itself by not allowing oneself to be controlled by the desire for pleasure or fear of pain, by using one's mind to understand the world and to do one's part in nature's plan, and by working together and treating others fairly and justly. Alongside Aristotelian ethics, the Stoic tradition forms one of the major founding approaches to Western virtue ethics. Wikipedia, s.v. "Stoicism," last modified February 2, 2022, 03:25 (UTC), https://en.wikipedia.org/wiki/Stoicism.

[15] May, *Creatio Ex Nihilo*, 3.

[16] According to Hubbler, they all looked to Plato's Timaeus for their cosmology; however, they saw rather different things. Some saw the Timaeus as a myth and the teaching of order drawn from disorder as a figure drawn by Plato for educational purposes. They also accepted Aristotle's argument for the eternity of the cosmos. In addition, they accepted the Aristotelian notion of matter as "body in potency." Others took a more literal reading of the Timaeus and held to creation in time. Their reading left them with the difficult task of explaining the pre-cosmic chaos in the receptacle. Hubler, "*Creatio ex Nihilo*," 57.

the unreal and unholy world, and it is only by rational thinking that the highest and eternal ideas are known.[17] He affirms "an eternal 'matter' beside God, a receiving principle from which everything can develop. The cosmos is an eternal, divine emanation of the timeless and impassive Upper Being, without beginning or end."[18] Plato's teaching is continued by the dualistic Middle Platonism. Dualism sees reality in terms of matter and mind,[19] recognizes a top-down principle, and emphasizes the transcendence of a supreme Upper Being. The Ideas are also seen as divine mind as well as the thoughts of God. It can be seen that Middle Platonism had to address the problem of evil since the world, or matter, was also defined as an evil.[20] Further, the Demiurge of Plato's *Timaeus* is equated with the Supreme God in the Middle Platonism, which is also *Nous* and the sum of Ideas. The *Timaeus* is systematized with "Three Principles" that God, Ideas, and Matter equally constitute the world. This view was taken and used to construct early Christian theology;[21] however, there was opposition and argument for a Demiurge,[22] by

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[17] Sjoerd L. Bonting, *Creation and Double Chaos: Science and Theology in Discussion* (Minneapolis, MN: Fortress Press, 2005), 63.

[18] Bonting, *Creation and Double Chaos*, 63.

[19] "In the philosophy of mind, a mind-body dualism denotes either the view that mental phenomena are non-physical or, at least, that mind and body are distinct and separable. Thus, it encompasses a set of views about the relationship between mind and matter, as well as between subject and object, and is contrasted with other positions, such as physicalism and enactivism, in the mind-body problem…. Dualism is closely associated with the thought of Rene Descartes, which holds that the mind is a nonphysical—and therefore, non-spatial— substance. Descartes clearly identified the mind with consciousness and self-awareness and distinguished this from the brain as the seat of intelligence. Hence, he was the first to formulate the mind-body problem in the form in which it exists today. Later, because of value-judgement in dualism bring a lot of destructiveness in society. For instance, between Heaven and Earth, Heaven is Holy and the Earth is evil; between man and woman, man is superior and woman is inferior, between day and night, day is good and night is satanic, etc." Wikipedia, s.v. "Body-Mind Dualism," last modified January 15, 2022, 12:45 (UTC), https://en.wikipedia.org/wiki/Mind%E2%80%93body_dualism.

[20] Bonting, *Creation and Double Chaos*, 63.

[21] May, *Creatio Ex Nihilo*, 4.

[22] The word "demiurge" is a translation of *demiurgus*, a Latinizeed form of the Greek *demurgos*. The common meaning is "craftsman" or "artisan," but it gradually came to mean "producer," and eventually "creator," In Plato's Timaeus, the Demiurge is presented as the creator of the universe. The Demiurge is specifically described as creator in the Platonic (310-90BCE) and Middle Platonic (90 BC- 300 CE) philosophical tradition. Wikipedia, s.v. "Demiurge," last modified January 19, 2022, 07:36 (UTC), https://en.wikipedia.org/wiki/Demiurge.

holding dualism, because they saw that demiurge fashioned and designed the universe as creator.[23]

Gerhard May critically assumes, pointing out that the earliest evidence of *creatio ex nihilo* can be found in 2 Maccabees 7:28 and explaining "world-creation in Hellenistic Judaism," that *creatio ex nihilo* is formulated for the sake of the sovereignty and omnipotence of the creator. In a further study, he also points out the fluidity of Greek the expressions *ek me ontos* and *ek me ontwn*—he points out that they are equivalent, sharing the meaning "out of (absolute) nothing." Thus, they are interchangeable. Plato's disciple Hermodor took *ouk on* for "matter" and used it as "out of absolute nothingness" while Plotinus conceived matter as *me ov,* which meant "non-being."[24] Due to such interpretations, the thought of *creatio ex nihilo* arose.

Another reason for the rise of *creatio ex nihilo* was to prevent the perceived threat of Gnosticism. It presented the strongest challenge to the young Christian church in the turmoil of the second century. Although the polytheism of Greek and Roman religions was left behind by educated people, Eastern cults such as "Egyptian worship of Isis and Osiris, Syrian worship of Baal, Persian worship of Mithras, the Greek mysteries, and Babylonian astrology were still spreading."[25] They all had the common idea that the material world was only transitory because there was another world beyond it. They believed that human souls were able to be united with the divine principle and thus obtain immortality. Gnosticism was an umbrella term for the

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[23] May, *Creatio Ex Nihilo*, 4. Moreover, the demiurge is working with a plurality of bodies in pace. Of necessity some are smaller, sharper, and faster than others. Hubler, Creatio ex Nihilo, 38.

[24] In the footnote, May describes how "Porphyry in Proclus, on Timaeus 86 BC…uses the expressions *ek me ontos* and *ek me ontwn* as equivalents, with the meaning of 'out of (absolute) nothing'. … How fluid the usage was is shown by the fact that, on the other hand, Hermodor (n. 69 above) describes matter as *ouk on*; similarly, Porphyry in Proclus, on Timaeus 71D" May, *Creatio Ex Nihilo*, 17.

[25] Bonting, *Creation and Double Chaos*, 66.

collection these ancient religious idea and systems.[26] When tracing the origins of Gnosticism, it can be found to be rooted "in the dualism of Persian religion, the allegorical idealism of Middle Platonism, and the apocalypticism of Jewish mystics."[27] Indeed, the second-century Christian church used the gnostic allegorical method to find support for their ideas and teachings in the Hebrew and Christian scriptures. The key gnostic teaching is "redemption." Gnostics believed, by going beyond rational philosophy and empirical observation, that redemption was gained by esoteric knowledge (*gnosis*) and received by the initiated via divine revelation. By holding dualism, they accepted that the world derived from evil matter was created by a lower or evil demiurge.[28] The key points of gnostic belief are as follows:

i. An evil demiurge, often identified with Yahweh, the God of the Old Testament, created the world from evil eternal matter.
ii. Salvation is obtained by gnosis, esoteric knowledge revealed by the good God, the Father of Jesus Christ.
iii. Humanity is divided into three categories: (1) a spiritual elite able to achieve salvation; (2) "psychics" capable of a modified form of salvation; and (3) "material" people cut off from salvation.[29]

Since the newly formed Christianity was nearly swallowed by the gnostic movement, there was a forced confrontation which produced a major clarification of creation theology.[30] The belief of creation through Gnosticism became theologically and conceptually problematic for the free and unconditioned character of God's creative activity. However, the apostle Paul also expressed the

[26] Gnosticism is a collection of ancient religious ideas and systems which originated in the first century AD among early Christian and Jewish sects. (*Gnostikos* meant "having Knowledge.") These various groups emphasized personal spiritual knowledge (gnosis) over orthodox teachings, traditions, and the authority of the church. Viewing material existence as flawed or evil, Gnostic cosmogony generally presents a distinction between a supreme, hidden God and a malevolent lesser divinity (sometimes associated with Yahweh of the Old Testament) who is responsible for creating the material universe. Wikipedia, s.v. "Gnosticism," last modified January 30, 2022, 18:48 (UTC), https://en.wikipedia.org/wiki/Gnosticism#Jewish_Christian_origins.

[27] Bonting, *Creation and Double Chaos*, 66.

[28] Bonting, *Creation and Double Chaos*, 67.

[29] Bonting, *Creation and Double Chaos*, 67.

[30] Bonting, *Creation and Double Chaos*, 69.

idea of *creatio ex nihilo* when he stated, in the strict sense, that God "calls into being the things that are not" (Romans 4:17).[31]

A third reason for the rise of *creatio ex nihilo* was Christian opposition to Marcionism.[32] Joining with Syrian Gnostics, it was an early Christian, dualist belief system. Similar to other forms of Gnosticism, Marcion rejected the Hebrew Bible because he saw the Old Testament God as a genocidal tyrant. Standing on the Platonic teaching of morality, he believed the Hebrew God was a lower deity who was a wrathful, jealous, and evil demiurge. He started with Paul, held the doctrine of two Gods, and opposed the connection between God and the world. Conditioned on dualism, he was a strict docetic, claiming that Christ could not have been human as well God. What is more, Jesus had no material body. Marcion taught that the world was created by the demiurge from the unformed, evil matter—all things created from the world and matter are therefore bad and hateful. So, he absolutely rejected the bodily resurrection and demanded an extreme ascetic life. Based on the Platonic-gnostic view, he affirmed that

> The unconscious self of human[ity] is consubstantial with the Godhead, but through a tragic fall, it is thrown into a world that is completely alien to its real being. Through revelation from above (*gnosis*), humans become conscious of the[ir] origin, essence, and destiny.[33]

His extreme devaluation of the world and merciless critique of the anthropomorphism of the Old Testament effected the church greatly. Therefore, Marcionism was also one of the strongest and

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[31] May, *Creatio Ex Nihilo*, 27.

[32] Marcionism was founded in Rome by an educated and wealthy man, Marcion of Sinope, around the year 144 CE. Marcionites accepted the New Testament and its God, believed that Jesus was the only savior sent by God (though not the God of Israel), and saw Paul as the chief and true apostle. A primary difference between Marcionites and Gnostics was that the Gnostics based their theology on secret wisdom (as, for example, Valentinus who claimed to receive the secret wisdom form Theudas who received it directly from Paul) of which they claimed to be in possession, whereas Marcion based his theology on the contents of the Letters of Paul and the recorded sayings of Jesus— in other words, an argument from scripture, with Marcion defining what was and was not scripture. Wikipedia, s.v. "Marcionism," last modified January 30, 2022, 12:50 (UTC), https://en.wikipedia.org/wiki/Marcionism.

[33] Bonting, *Creation and Double Chaos*, 67.

earliest exponents of the idea of *creatio ex nihilo* or creation out of absolute nothingness to be used in that age.[34]

May indicates that the first Christian Gnostic Basilides, with his son Isidor, belonged to a gnostic system which is different from the other gnostic systems of that era. He points out that Basilides used "creation" in a strict sense where "in the beginning there is the pure, ineffable Nothing…. [and he] equated this original Nothing with God." However, May assumes that some Basilideans might have been taking, interpreting, and using it in the concept of *creatio ex nihilo* in the sense of absolute nothingness for that "Nothing."[35]

Sjoerd L. Bonting describes how some Christian apologists, like Theophilus of Antioch (c.185), Irenaeus (c. 130-200), Tertullian (c. 160-220), and Hippolytus (c. 220) used creation out of absolute nothingness. For example, Origen (c. 230) prevented the church from the danger of gnostic teachings by taking *creatio ex nihilo* to an extreme. He remarks that Theophilus of Antioch, a rather confused and rash theologian, first introduced *creatio ex nihilo* without thinking thoroughly but only with worries for dangers. So, his doctrine of creation out of absolute nothingness later made God responsible for the presence of evil in the world, and he equated Logos and Spirit with the Wisdom of God. Hubler also states that Tatian and Theophilus vigorously attacked Greek philosophical teachings, especially for material creation in defending bodily resurrection to support and focus only God's power which enables the raising of the dead. Both believed that the world had been created for the sake of humans and that humanity was the goal of creation/cosmos. In particular, he points out that Theophilus uses the Greek phrase *ek ouk ovtwv* (viz. *ouk ov* instead of *me ov*) which stands for the expression of denying the eternity

[34] May, *Creatio Ex Nihilo*, 54-61.
[35] May, *Creatio Ex Nihilo*, 62, 66-67.

of matter with the sense of absolute nothingness for *nihil.*[36] Irenaeus carried on this concept by stating that "God is unoriginated, eternal, needs nothing, is self-sufficient, and confers existence on everything that is…[and] celebrates the perfection of God, who is all light, all Spirit, all substance, and the source of all good. God embraces everything and grants existence to all things."[37]

Once Augustine adopted it, however, creation out of nothingness became a universally accepted doctrine in the church. After being dogmatically formulated at the Fourth Lateran Council (1215), as well as handed down by Martin Luther and John Calvin, *creatio ex nihilo* was reaffirmed at the First Vatican Council in 1870. Essentially, it was quickly accepted with little controversy because of having a great attractiveness the capacity to dispose of the eternal evil matter and demiurge-creator of Marcionism and other forms of Gnosticism. Additionally, it upheld Jewish-Christian monotheism.[38]

Bonting criticizes some of the Patristic Fathers' solutions as lacking thorough thinking regarding *creatio ex nihilo,* primarily because it has resulted in what he assesses to be many unsolvable problems for the church today. As a result, he argues that it cannot play any role in Christian doctrines, including eschatology, the resurrection of the dead, or even creation. He states that it raises four serious problems:

i) Conceptually, *nihil* strictly means that there is a complete absence of things, that there is "no thing" at all;
ii) Biblically, it is not a part of the P source for Genesis, cannot be read into the creation account, and the Hebrew word Bara does not have the meaning "out of nothing";

[36] Hubler, "*Creatio ex Nihilo*, 103," 122-123.
[37] May, *Creatio Ex Nihilo*, 165.
[38] Bonting, *Creation and Double Chaos*, 69.

iii) Scientifically, it is not relatable to an initial "explosion" at t=0 of the cosmic beginnings (viz. the Big Bang Theory) because nihil means that there is no matter, energy, physical law, information, structure, quantum activity, and order;
iv) Theologically, *nihil* means that in the initial "nothingness" there is even no God because there is nothing to which (or to whom) God can reveal her or himself.[39]

Additionally, *creatio ex nihilo* is traditionally not a concrete Christian doctrine. This concept was rushed by worried Church Fathers, and is vague and full of misinterpretations, biases, and problems. It is a closed concept which does not conceptually, biblically, scientifically, and theologically work because the concept is rife with problems both historically and presently.

C. The Objection to the Offspring of *Creatio Ex Nihilo*

As has been noted thus far, *creatio ex nihilo* came out of the rushed and shallow thoughts of worried and closed-minded Patristic Fathers. It bears dangerous, destructive, and deadly conceptual offspring—concepts of God, power, system(s), and structure(s). Let alone not solving the problem of evil, these concepts support unnecessary problems for the church today, making them more widespread.

1. God the Creator

This concept of God traditionally born out of creation *ex nihilo* is all-determining in the sense of static and fixed theism. God is defined and accepted as the highest and above all. God the creator alone is worthy of worship. He is perfectly everlasting and unchangeable. He is the mighty warrior, the only King of kings, and the perfect goodness of all. He is omnipotent, omniscient, and omnipresent so that nothing escapes from God. His power is the most supreme power of the universe and called "the Holy Power." This makes Him worthy of worship, and creation depends on it because God alone is the purposeful creator of the world. He is the One

[39] Bonting, *Creation and Double Chaos*, 70-74.

who gives the ultimate guarantee to human life and causes the world to be meaningful and purposeful because He holds the future. He is the source of moral norms because He is perfectly good. He is the Law Giver and Supreme Judge, so He gives awards for the good and punishment to the bad. He is the trustworthy ground because He gives hope and ultimate victory of good over evil.[40]

From this traditional concept of God, the Five Solas of Protestantism were developed: God Alone, Christ Alone, Scripture Alone, Faith Alone, and Grace Alone.[41] These doctrines were developed during the late medieval period and even declared as Protestant during the Reformation regarding matters of revelation and salvation. Through these theological concepts, the Christian God is seen as the only way to salvation; the church as the Body of Christ is the only authoritative channel of grace for all; and the Bible is held as the only system of thought—and is authoritatively interpreted by the church.[42] These "alone" doctrines, and their teaching and preaching, are what lead to many of the conflicts in some Christian societies, especially in our multi-religious world. They are exclusive and intolerant of the revelation and salvation of God in other faiths because they envision, with the selfish and extreme echo and desire, rebuilding Christendom.[43] For instance, these "alone" doctrines are, in the name of salvation, used by popular evangelists as the tools of evangelization. This has resulted in the rising number of conversions from Buddhism to Christianity in Myanmar.

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[40] David Ray Griffin, *Evil Revisited: Responses and Reconsiderations* (Albany: SUNY Press, 1991), 10-11, EbscoHost.

[41] "The Five Solas," Introduction to Protestantism: Examining the Protestant Faith, accessed August 28, 2020, http://protestantism.co.uk/solas.

[42] Ian G. Barbour, *Religion and Science: Historical and Contemporary Issues: A Revised and Expanded Edition of Religion in an Age of Science* (NY: HarperCollins Publishers, 1997), 7.

[43] Barbour, *Religion and Science*, 308.

Regarding the relationship between religion and science, Thomas Aquinas adopted Aristotle's "Unmoved Mover" as the personal Father, Judge, and Savior described in the Bible. So, the Greek's philosophical and metaphysical First Cause was taught and predominated as the dynamic and purposeful Creator God with His personal attributes of omnipotence, omniscience, omnipresence, and eternity in biblical theology. In the cosmological dimension, God was presented as the *continuing ruler of nature,* acting as "primary cause" through His secondary causes or agents such as natural causes, angels, miracles and so on. Through this linear and hierarchical view of medieval theology, humanity became the center of cosmos. Nature was thereby relegated to the stage for playing out the drama of God and humanity. It became especially useful for subordinating human life. At last, this portrayal of ultimate God-centeredness has been linearly and fixedly distilled into human-centeredness and male-centeredness in the world. Even God becomes a male God who takes the position on the top of all others.[44] As a result, nature is exploited.

Based on Descartes' substance thinking, God is conceived as the supreme person.[45] This God *qua* Unmoved Mover is the immutable Absolute. He is *impassible,* or unaffected by the world. He only loves to do good things, knows all events in advance, controls things in detail, receives and responds to nothing, and possesses no passion or emotion. As a result, determinism in science and predestination in Protestant Christianity are held. He is completely self-sufficient, independent, and unchangeable. This God is, indeed, not the biblical God who is a merciful, loving father, the one who is careful, and who indwells all life and gets along together in the

[44] Barbour, *Religion and Science*, 8-9.

[45] C. Robert Mesle, *Process-Relational Philosophy: An Introduction to Alfred North Whitehead* (West Conshohocken, PA: Templeton Foundation Press, 2008), 68-70.

history of Israel.[46] This is not the God of Israel because He isolates himself and stays alone the so-called holy place which is distant form the purportedly evil world.

The concept of God is the most sensitive for seeing, speaking, and doing for Christians in their daily experiences between each other including politics, economics, religion, education, and so on. It is the most crucial norm. Through this traditional concept of God arising from *creatio ex nihilo* they also build systems and structures for different institutions.

2. System and Structure

Peter M. Senge, a systems thinker, states that "today's problems come from yesterday's 'solution'."[47] Linear top-down systems and structures have been created and handed down from this traditional concept of God. As can be seen in the diagram below, the Christian Trinity is composed of only three persons—Father, Son, and Holy Spirit—in the dominant system.[48] This pyramidal hierarchal system and structure of Godhead places God the Father on the top, with the Son Jesus Christ and the Holy Spirit at the left and right angles of the bottom of the triangle, thus producing oppression and destruction. From this top-down depiction of Trinitarian God concept, the following relation system and structure is conceptualized and practiced in communities: the highest is the holiest, while the lowest is the ugliest or filthiest. For instance, the attractiveness and beauty of women are seen as satanically persuasive ways of fallenness or sinfulness characters. Due to the patriarchal system derived from this traditional concept of God, it is taught that women cannot be ordained or hold positions of leadership within the church because the female body is essentially unclean, especially because of menstruation. Nature is also exploited

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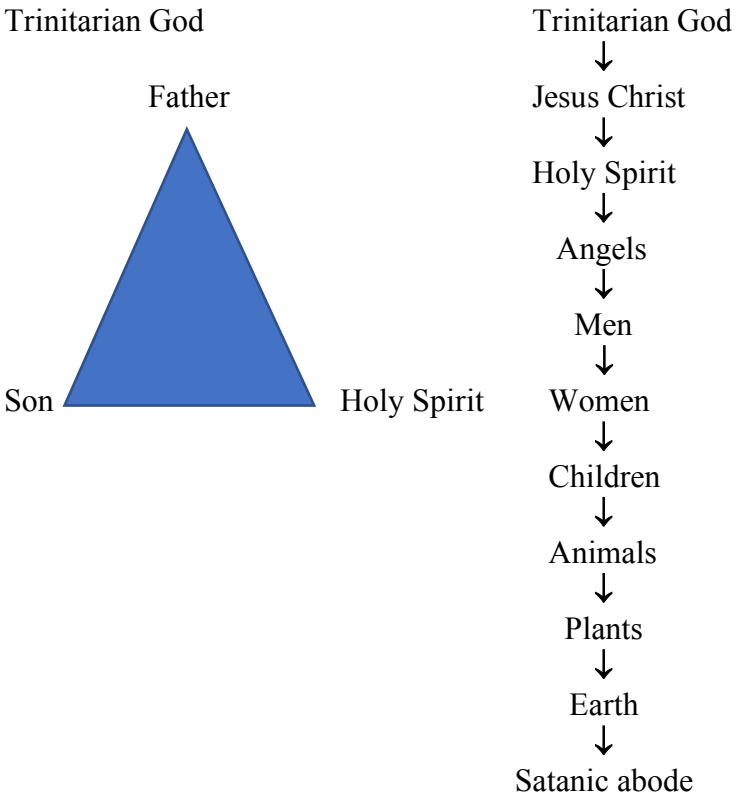
[46] Barbour, *Religion and Science*, 206-207.

[47] Peter M. Senge, *The Fifth Discipline: The Art and Practice of the Learning Organization* (NY: Crown Publishing Group, 2006), 42-52.

[48] John B. Cobb Jr, and David Ray Griffin, *Process Theology: An Introductory Exposition* (London: Westminster John Knox Press, 1976), 9.

for the sole purpose of assuaging human's desire, greed, and use as on the grounds that non-sentient things are merely lifeless.



Further, during the period of Sir Isaac Newton, with his discoveries of "the laws of motion and gravity" in a mechanistic worldview, God was identified as the *divine clockmaker*. Such a static and fixed machine-like system has been passed down until today. Since God was considered the Designer of the world-machine, God functioned to continue His activity by doing things like adjusting the solar system in a mechanical natural system and order. Everything in such a worldview is fixed, deterministic, and reductionistic. It should be noted that the so-called "God of the gaps" theology was introduced to explain unknown areas of science through appeal

to the miraculous and supernatural intervention of God.[49] Ian G. Barbour describes the changing progress and views of nature as follows:

Medieval Age	**Newtonian Age**
1. Fixed order	Change as rearrangement
2. Teleological	Deterministic
3. Substantive	Atomistic
4. Hierarchical, Anthropocentric	Reductionistic
5. Dualistic (Spirit/Matter)	Dualistic (Mind/Body)
6. Kingdom	Machine[50]

Together with scientific materialism, traditional biblical literalism was also tightly held and practiced.[51] Therefore, a literal reading of the Bible is idolized by some communities today and used as a tool and measurement of the church to make decisions when talking about the matter of woman leadership, nature, and other faiths. The authority of such patriarchal readings of scripture silences voices, shuts mouths, and marginalizes others to the point of adopting silence—even unto death. For instance, the Burmese military regime—the worst and most brutal system—was born. It has exerted control for over seventy years, and it has propagated the world's longest civil war between the majority Burmese, other ethnic groups, and other variety of faiths and religions in the country.

3. Mental Model

The dominant and monarchical system mentioned above results in exclusively tyrannical mental models. Those systems also come out of monarchical, hierarchical, and dualistic thinking. Cosmic dualism an offspring of "creation out of nothing" and Greek dualism results in the split between God and World. It not only decides that the material universe has no intrinsic worth but

[49] Barbour, *Religion and Science*, 21-23
[50] Barbour, *Religion and Science*, 282.
[51] Barbour, *Religion and Science*, 78-84.

also ultimately eliminates the ultimate value of God.[52] The dualism penetrating Western thought divides reality into mutually exclusive binaries: "mind/body, reason/emotion, objectivity/subjectivity, domination/submission, impersonal/personal, and power/love."[53] Crowning dualistic thinking with judgement creates division between each other: heaven from earth, women from men, mind from body, day from night, white from black, and so on. Then it judges them such that heaven is holy, but the earth is evil; men are superior while women are inferior; day is good and night is satanic; white is good, but black is bad; and so on.

Sallie McFague points out how the present mental model of the church is constructed on Christ's (male) body as a monarchical, hierarchical, and dualistic model. So, the cosmos as the body becomes full of wounds and scars because of injustice, greed, and exploitation.[54] Saw Hlaing Bwa criticizes this approach based on such mental models, stating that, in systems thinking,

> view[ing]things in isolation from each other…for almost a thousand years, western thought has interpreted the reality [as] characterized by dualism and hierarchy…material and spiritual realities [which] came to be seen as totally separate, even adversarial to each other. Western mechanistic thinking succeeded in separating science from religion, science from ethics, and theology from spirituality. Based on this thinking, theological educations and the church establish themselves on a separate ground of existence and fields that have nothing to do with each other. Both theology and the church and its mission become a separate realm from science, politics, cultural, socio-economic and other various religious lives and experiences of the people. The ultimate result of such dualistic and hierarchical way of western modern thinking is a learned inability to think any other than linear, dualistic and hierarchical way when dealing with problems, organizing ideas and works, and in structuring society, church and our religious congregations. And this way of thinking had penetrated into the theological system and become established as the will of God, which in

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[52] Eleanor Rae, *Women, the Earth, the Divine: Ecology and Justice Series,* (Maryknoll, NY: Orbis Books, 1994), 32.

[53] Barbour, Religion and Science, 149.

[54] Sallie McFague, *The Body of God: An Ecological Theolog,* (Minneapolis, MN: Fortress Press, 1993), vii-30.

> turn fostered the breakdown of relationship with other people outside of our circle, and hostility within the society.[55]

Such a mental model is predicated upon monarchical models, mechanical systems, and dualistic separation. Also, Herbert Spencer's term "survival of the fittest," which was used by the biologist Charles Darwin,[56] is turned into the concept and practice of competition—viz. the more physically and quantitatively powerful one has the greater chance to survive. The small one has little hope of surviving, let alone thriving. The small one is lost as the cost of the larger one's success, survival, and living in daily societal and governance systems. For instance, the minority ethnic nationalities are called terrorist groups in Burma (Myanmar), so much so that it is accept as true by the majority Burmese nationalists. In this way, minority rights are lost.

4. Power

The traditional doctrine of Omnipotence rooted in *creatio ex nihilo* is often interpreted literally as: "i) having power over all; ii) having all power; iii) having all the power it is possible (for one being) to have; iv) having the most power, being the supreme power, being more powerful than everything else;….and v) the power to overpower everything else."[57] This power is called unilateral power. It is a coercive power used to control and dominate others. It affects without being affected by others. By idolizing this power, daily culture and systems are formed so that social injustices and oppression occur. Under the constructed social structure in this power, the weak are less valuable. The leaders, bosses, owners, and so on are the only power-holders over employees who work for them. In connecting traditional patriarchal hierarchy with

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[55] Saw Hlaing Bwa, "Systems Thinking for the Transformation of the Church and Society," ecumenical lecture (Myanmar Institute of Theology, Yangon, March 7, 2013), 3.

[56] Wikipedia, s.v. "Survival of the Fittest," December 9, 2021, 16:11 (UTC), https://en.wikipedia.org/wiki/Survival_of_the_fittest.

[57] Griffin, *Evil Revisited*, 55.

this power, men come to rule—being unapproachable, governed by reason, and detached from virtually all emotion. Women are seen as less than fully human. Since they are more emotional than men, they are easily affected. Since they are considered weak, they are less valuable. The same is true for children, slaves, servants, employees, racial or ethnic minorities, and the poor. All are unheard, unvalued, and uncounted. So, unilateral and coercive power can ultimately lead to torture, slavery, rape, child abuse, murder, and so on.

Such power cares nothing for the other. There is a fundamental opposition between this view of unilateral power and love because being unilaterally powerful means that a person cannot be affected by others. S/he must not care for others. They must be merciless and machine-like. This power is only for elites on the top, and thereby creates wider gaps so that the rich become richer, the poor become poorer, the greedy become greedier, the cruel become crueler, and so on. Seeing unilateral power as the essence of value and reality is deeply wrong.[58] At last, according to the worldview spawned from the position of *creatio ex nihilo*, these are all recommended as being universal truths.

Religious intolerance among different faiths occurs because this power encourages exclusivism where only the Christian church is authorized as the sole way toward Truth. When coupled with political and military power, this unilateral power leads, in the name of God, to religious persecution and conflicts such as crusades, holy wars, and even colonialism, neocolonial imperialisms, and economicsm. These views bring a continuing danger to the world of religious pluralism, nuclear weapons, cyber-wars, bio-chemical wars, and so on. Moreover,

[58] Mesle, *Process-Relational Philosophy*, 70.

this hierarchical and unilateral power re-enforces the useless doctrine of *creatio ex nihilo* within an endless cycle.[59]

5. The Problem of Evil

Indeed, if God is the solitary power in reality, perfectly good and completely pure, there must be no evil in His creatures because He must absolutely enable all things to be pure. But there are evil things. From where do they arise or how are they created? Seeing the problem of evil according to the doctrine of creation out of absolute nothingness, God alone is the only subject capable of being fundamentally responsible for all evils—natural evils and moral evil. All evils are ultimately rooted in God as their source because He alone created all from absolute nothingness.[60] For instance, God is responsible for the Holocaust because He allowed it to happen.

Augustine, based on the all-determining concept of God, developed the doctrine of Original Sin as an *ad hoc* solution for the problem of evil. Let alone solve the problem of evil, however, it causes more problems. Together with dualism, traditional theism shows that Satan (as God's cosmic opponent) is a fallen angel who was unilaterally condemned by God; however, Satan still has some demonic power to exercise by himself, even though he has fallen away from God, and can thus cause evil.[61] There is an explanation that sins occur because of Satanic power as God's hidden and secret plan or will. For instance, Jesus's crucifixion is preached as saving people from their particular sins and the stain of Original Sin. Jesus escaped from the trap of Satan's demonic power of death because he is the only begotten son of God. This scenario is

[59] Barbour, *Religion and Science*, 308.
[60] Bonting, *Creation and Double Chaos*, 70-74.
[61] Griffin, *Evil Revisited*, 14.

taught as a salvific drama planned and played by God Himself. In this way, God turns out to once again be clever, crooked, and dishonest. One question we could ask regards the origins of Satan? If God created *all things,* then Satan is created, so that God alone is responsible for Satan's existence because He knows all and has created the world out of absolute nothingness. As a result, God is thus responsible for all that Satan does in the world.

There is another theological approach for explaining the problem of evil which is called the "free-will defense." Traditional free-will theism states that God *essentially* holds all the power in the world, but He *voluntarily* assigns power to His creatures. They have a certain power to conduct themselves, within the framework of their limited freedom. So, evil things are a result of the free acts of creatures. Additionally, there is a teaching that physical evil—pain and suffering—are intended to have moral and spiritual qualities so that believers become spiritually and physically mature persons for the sake of "soul making." The power is again only for *human* beings, but not for other creatures. The given power of human beings is to rule over the others for what they want and need. Based on their decisions, (mis)using their God given power, humans have given rise to systemic evils—military regimes, Auschwitz, Hiroshima, Wounded Knee, the Rohingya Massacre, mass starvation, and so on. There remains the question of natural evil—earthquakes, hurricanes, droughts, flood, global warming, and the possibility for living cells to become cancerous.[62] It is not clear that God directly handles evil matters for the rest of creation or nature, or lets them occur as it is. God the absolutely perfect is a contradiction when

[62] Griffin, *Evil Revisited*, 17-22.

we consider the existence of evil. Indeed, such a God must be evil, in part (at least), which means that they are not God.[63]

Frankly, the traditional theism which comes from *creatio ex nihilo,* along with its related theologies, cannot provide an adequate answer to the problem of evil. Let alone solve the problem of evil, even God has disappeared together with its absolute nothingness. Due to the all-powerfulness of the traditional God, Griffin asserts that

> this "problem of evil" can be formulated thus: (1) God is, by definition, omnipotent and perfectly good. (2) Being omnipotent, God *could* unilaterally prevent all evil. (3) Being perfectly good, God would *want* to prevent all evil. (4) However, evil does occur. (5) Therefore, God (thus defined) does not exist.[64]

D. Summary and Evaluation

Theravada Buddhism has no concept of a creator or creation. Thus, the major stumbling block between Christianity and Buddhism is the connected concepts of creation and creator. The conflict occurs when Buddhism holds *paticcasamuppada*, while Christianity affirms *creatio ex nihilo* and its creator; a Buddhist sees *Anatta* or non-self, but a Christian believes in a personal being in the sense of a substantial person; and Buddhists analytically and empirically discern

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[63] In comparison to Theravada Buddhism, Ko Ko Naing, a de-monastic and Buddhist convert and lecturer, states that such a *creatio ex nihilo* God as the creator, with his/her qualities and attributes, cannot be God. It is understood equally as *Brama* in Buddhism. *Brama* is not a person but lives as the highest person in the celestial abode. Like a penetrating energy, s/he lives separately from the world as his/her holiness. S/he creates, with the power of Maya, all creatures and the world. There are two kinds of *Brama*—Absolute and Conventional *Brama*. Their qualities and attributes are holiness, nothingness, peacefulness, beginninglessness and endlessness, indestructability, eternalness, fundamental energy, and hiddenness; and unborn, independent, ever-living, not going and coming, un-see-able, not physical and not mental, unchangeable, existing by him/herself, unmovable, unknowable, unimaginable, incomparable, and realistic. The universe comes out of *Brama* so that everything is *Brama*. There is no present, past, and future in him/her. S/he is the only one to worship for human beings to be free from worldly things. S/he first created the highest celestial abodes, then the heavenly abode, earth, and under-earth abodes respectively. Ko Ko Naing "Nyeinchan seyar dhamma panyar" (in Burmese) which means "Harmonious theology," (in English), *Engagement: Judson Research Center Bulletin* 2 (August, 2004): 73-74.

[64] David Ray Griffin, *Panentheism and Scientific Naturalism: Rethinking Evil, Morality, Religious Experience, Religious Pluralism, and the Academic Study of Religion*, Toward Ecological Civilization Series, (Claremont, CA: Process Century Press, 2014), 109-117.

natural laws and meditate for enlightenment, whereas some Protestant Christians read and interpret the Bible literally and consistently pray to a distant personal God for their salvation. In these contrast against between each other, they could not go together to a common goal. Therefore, this traditional theological concept based on *creatio ex nihilo* is dangerous, problematic, and irrelevant in our present-day theological journey, especially for Christianity in a majority Buddhist society, because it causes globally ecological and *oikonomical* problems, and it makes them widespread especially for the Christians in a Theravada Buddhist majority country. All of this means that a new approach is required in lieu of *creatio ex nihilo*. I propose that the conceivable and relevant theological concept of *creatio continua* is just such a concept which can build a bridge between Christianity and Buddhism.

CHAPTER TWO

CHRISTIANITY AND *CREATIO CONTINUA*: A PATH TOWARD RECONCILIATION

Creatio continua is useful in our scientific and open age of globalization. It is a resource for building bridges to other faith communities, especially to share and to be shared for going forward on the cosmic journey. As mentioned above, *creatio continua* is especially helpful for reconciling Theravada Buddhism's *Paticcasamupada* with Christianity.

The term *creatio continua* is simply interpreted as "Continuing Creation" or "Continuous Creation." Keith Ward defines the term *creatio continua* as "refer[ing] to God's continuing creative activity throughout the history of the universe. Creation is the *inter*dependence of the whole of space-time on God. Thus, at any particular time God's creation has not been completed, and the future is partly open…even for God."[1] In this chapter, I will defend *creatio continua* by describing the Hebrew concept of *creatio continua*: the legacy of the Patristic Fathers, and process theism and its related constituents—God, systems, mental model, power, and solving the problem of evil.

A. The Hebrew Concept of *Creatio Continua*

To know the origin of *creatio continua*, the Hebrew concept of creation is necessary. As Christianity evolved from Judaism, the original Hebrew concept of creation or *creatio continua* was adapted. It should be kept in mind that there was no concept of *creatio ex nihilo* in early

[1] Keith Ward, "*Creatio Continua*," Encyclopedia of Science and Religion, Encyclopedia.com, last modified August 8, 2020, https://www.encyclopedia.com/education/encyclopedias-almanacs-transcripts-and-maps/creatio-continua. Italics are mine.

Jewish and Christian teachings until the second century. When looking to the Jewish, biblical, and Near Eastern background, there was no *creatio ex nihilo*.[2] Indeed, creation out of absolute nothingness is not a biblical doctrine. Still there are some biblical passages which suggest the idea, like John 1:3, Romans 4:7, Colossians 1:16, and Hebrews 11:3; regardless, no New Testament passage (including them) provides substantive evidence for the doctrine.[3] As a monotheistic religion, Judaism evolved, by interacting with polytheistic religions of the Ancient Near East: Ancient Egyptian religion the Sumerian religion of ancient Mesopotamia, Assyro-Babylonian religion, Baalism of the Canaanites, Arabian religions, the ancient Indo-Iranian religion Zoroastrianism, and Greek religion. As a result, Christianity received these same influences.[4]

As described in the previous chapter, the Greek empire was expanding with their politics, culture, and economics creeping across and influencing the Ancient Near Eastern world. Greek culture, especially Greek philosophy, was enormously influential. Politically, the church was dominantly controlled by (Greco-) Roman rules. The church was also severely persecuted by (Greco-) Roman authorities for refusing to worship and give sacrifices to the emperor. Interestingly, there was also a rapid change in a Jewish sect by growing movement with/in Jewish circles and among so-called "pagans."[5]

In such a situation, no one could deny interactions between each other in many different areas. According to Hubler's research, commercial and political contacts between Greece and Egypt in the seventh and sixth centuries BCE are found. They conducted trading and joint

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[2] Hubler, "*Creatio ex Nihilo*," 71.
[3] May, *Creatio Ex Nihilo*, 27.
[4] Wikipedia, s.v. "Ancient Near East Religions," last modified December 21, 2021, 16:54 (UTC) https://en.wikipedia.org/wiki/Religions_of_the_ancient_Near_East.
[5] Bonting, *Creation and Double Chaos*, 66.

military operations, especially during the Egyptian's Twenty-sixth Dynasty. In the main trading center called Naucratis, there were both Greek and Egyptian sanctuaries which showed a mixed population. It has been documented that there were bilingual statues dating from the latter half of the sixth century BCE, which was dedicated to Amun in Egyptian and to the "Theban" Zeus in Greek. The evidence suggests that they shared practices and deities, each other, or they acknowledged some identification between them.

It should be noted that there was a dramatic turn at the time when Miletus was the key player between the two empires. In spite of explaining the beginnings of the world through the then traditional anthropomorphic genealogy, the Milesian cosmologists (e.g. Thales, Anaximander, and Anaximenes) broke with the tradition and adopted the Egyptian's cosmological view. In that view, a divinely singular and undifferentiated material source was the origin. Through the physical transformations of that material source, the world was produced after which it continued as an immanent force in the world. The Miletians did disagree on the nature of this material source: Thales believed that the source and life of the world was water; Anaximander, taught that it was the infinite; and Anaximenes taught that it was air.[6] Indeed, the concept of the becoming of the world or the origin of the universe in Greek philosophy was thus

[6] Hubler, "*Creatio ex Nihilo*," 1-5.

influenced by Egyptian concept especially from both the Heliopolitan[7] and the Hermopolitan[8] creation accounts during the seventh and sixth centuries BCE. Based on those interacting traditions, the prominent Greek philosophers Plato and Aristotle, and their followers, later carried down and constructed their respective philosophical positions.[9]

Hubler shortens his broader discussion about the positions of the fathers of Greek philosophy by providing the common positions for their teachings on "matter." Although there are different appearances in expression, they share some fundamental metaphysical presuppositions.

> 1. Plato: the receptacle, space, is the stage for change which occurs among spatially distended images of the forms. Physical matter as we know it is the geometrical ordering of these images.
> 2. Aristotle: matter is substance in potency. Prime matter is the analysis of the elements as they have the potency to transform one into another.
> 3. Stoa: matter is the characterless substance of the world, subject to different properties, heat, cold, wetness, dryness, etc.
> 4. Middle-Platonism: matter is body in potency.[10]

Despite all of these, the Jewish concept of creation was not changed even when encountering Greek philosophy but remained the concept of continuing creation. Philo (20 BCE -

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[7] Hubler states that, for the Heliopolitan creation account, "Atum first produced air and moisture. Shu and Tefnut, by means of expectoration and ejaculation. Shu and Tefnut in turn gave birth to earth and heaven. Geb and Nut, who then produced the kings and their sisters, Osiris and Seth, Isis and Nephthis… in cosmic and political understanding. Shu, the god of air produced the earth by creating a division in the primordial waters, which allowed the dry earth to appear. In the same act, Shu created the heaven as the under surface of the primordial waters which were raised above the Earth… the Egyptian universe existed as a bubble of air in the midst of the primordial waters… were already invoking the physical properties of elemental gods such as air and water as keys to understanding the origin of the universe." Hubler, "*Creatio ex Nihilo*," 7.

[8] Hubler states that "the Hermopolitan creation account was based on the work of eight primordial gods, known collectively as the Ogdoad. They were the gods of the primordial waters themselves and of their properties. In male and female pairs, they were: Nun and Naunet, the waters; Kak and Kauket, darkness; Heh and Hehet, infinity; Amun and Amaunet, hidden ones… Amun grew in importance in the New Kingdom as he was identified with the sun god, Re. He remained the hidden god despite displaying himself in his chief manifestation as the sun." Hubler, "*Creatio ex Nihilo*," 7-8.

[9] Hubler provides well-organized research on the background meeting ground between Greek and Egyptian traditions, as well as the former Babylonian tradition, detailed in chapters I, II and III of his dissertation. Hubler, "*Creatio ex Nihilo*," 1-72.

[10] Hubler, "*Creatio ex Nihilo*," 69-70.

50 CE), from the Alexandrian school, was the first prominent Hellenistic Jewish scholar and theologian of that era who sought to reconcile Judaism and Greek philosophy, especially Platonic philosophy.[11] He was thus a forerunner of Christian theology. When looking to Philo's theology of creation, we find that he accepts—by holding the connection between Platonic and Stoic conceptions—the creation of matter by God who is master, builder, founder, and planner of creation. He believed that God created "out of non-being" by which he meant pre-existent matter. For the situation of void, he conceives it as "matter" in empty space from which God subsequently created elements. He explains Gen 1: -1-3 as the "creation of seven ideas of Heaven, Earth, Air, (=skotos), Void, Water, Spirit, and Light" as pre-existent formless matter or condition as corporeal energies the process of creation.[12] It is also called God's creative goodness (*tub* in Hebrew) in the sense of continuation and co-condition from where new things arise. Moreover, Philo also conceived matter as *me ov* in a plural sense. (The interpretation and usage of the Greek word *me ov* in this chapter is opposite to that of the previous.) Although *me ov* generally means absolute "non-being" in philosophical writings, Plotinus also uses it (in the plural) as *ta me ovta,* meaning "through the act of creation they move from non-being into being."[13] As May states,

> God's creat[ion] "out of non-being" in the expression *ek me ontos and ek me ontwv* are interchangeable, without visible change of meaning. This oscillation between single and plural decisively counts against the view that Philo is here talking about unformed matter, for, as the indefinite and unlimited something, which is potentially everything, matter can only be described as *me ov*. Also, the fact that Philo always forms the expression 'non-being' with the negative *me*, is no sure indication that he looks upon matter as only relatively 'non-being.[14]

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[11] Wikipedia, s.v. "Philo," January 28, 2022, 01:36 (UTC), https://en.wikipedia.org/wiki/Philo.
[12] May, *Creatio Ex Nihilo*, 9.
[13] May, *Creatio Ex Nihilo*, 10-12.
[14] May, *Creatio Ex Nihilo*, 17.

Therefore, the *ek me ovto*s with the meaning of "out of matter" or "out of nothing" is interpreted as creation by God "out of non-being." It is not as *creatio ex nihilo* or as formation of the "non-being." Adopting the Hebrew concept of continuing creation, the Patristic Fathers carefully maintained the belief, faithfully carried it out, and handed it down through the generations.

As a concluding remark of this section, *creatio continua* is the original Hebrew concept and belief from which Christianity arose. There is no concept of *creatio ex nihio* in Judaism. Interestingly, they enabled interacting with Greek Philosophy.

B. Creatio Continua: The Belief Legacy of Patristic Fathers

When exploring the concept of *creatio continua*, it is necessary to trace the beliefs, practices, and faithful works of the Patristic Fathers; additionally, it is helpful to acknowledge who they were and how they constructed their Christian theological identity by following the creation of Judaism from whence it arose during the Axial Age. When tracing them back, the influences of the two major schools of thoughts are found: the school of Alexandria or the "Alexandrian School,"[15] and the school of Antioch or the "Antiochene School."[16] These are

[15] Situated at Alexandria, the school is distinct because of its intellectual supremacy in areas such as poetry, science, and philosophy. It is notable that Philo, in the first century, took metaphysical theories of the Greeks and, by the allegorical method, interpreted them in accordance with the Jewish Revelation. He dealt with: (a) human life as explained by the relative nature of humanity to God: (b) the Divine nature and the existence of God: and (c) the great Logos doctrine as the explanation of the relation between God and the material universe. From these arguments he developed a syncretism of oriental mysticism and pure Greek metaphysics. Neopythagoreanism and Neoplatonism are the first pure philosophy of the school. The doctrines as a synthesis of Platonism, Stoicism, and the later Aristotelianism with a dose of oriental mysticism gradually became more and more important. Wikipedia, s.v. "Alexandrian school," last modified August 18, 2021, 13:49 (UTC), https://en.wikipedia.org/wiki/Alexandrian_school.

[16] According to the Acts of Apostles, Antioch became one of the first Christian communities. It was from Antioch that Paul set out on his three missionary journeys: first with Barnabas to Turkey; second, with Silas to Macedonia and Greece, and third to Corinth, Ephesus, and the Macedonian Churches. Peter was the first bishop there. After the fall of Jerusalem in 70 CE, Antioch became the prime center of Christianity. Marianne Dorman, "Antioch," Marianne Dorman's Christian Website, Last Modified October 20, 2020. http://mariannedorman.homestead.com/Antioch.html.

crucial because they played key leading roles in creating the Christian theological identity. Indeed, the concepts and stances of these two schools still influence Christian theology today.

The lenses of these two schools are necessary when comparing *creatio continua* with *creatio ex nihilo* to clearly and holistically examine their differences and similarities. The Alexandrian school is named after the city of Alexandria. Founded in 331 BCE, it vigorously blossomed into the second city of the Roman Empire after Rome by the time of Constantine. It shone brightly because of its famous library, and due to its reputation as the home for Greek philosophy, poetry, literature, science, and learning. With its intellectual supremacy, the Alexandrian school utilized an allegorical method of interpretation to discern the literal, spiritual and moral meanings of scriptures. It accepted allegory as more important than the literal meaning of historical events and was open to the intellectual enrichment of all. However, it requires serious effort to find out the truths and mystery about/of God. God, for the Church leaders of this school, is believed to be a Trinity—Father, Son, Holy Spirit—and was viewed as a Trinitarian *perichoresis,*[17] or Trinitarian Relational God.[18]

The Antiochene school challenged Alexandria by dismissing allegorical meanings, instead insisting on the historical and grammatical meaning of a text. This is called the literal method of interpretation of scriptures. It emphasized historical facts and examined chronology and sequential events which provide little and limited meanings to those who read in allegories. It did not communicate abstract philosophical concepts, and focused on the humanity of Christ.

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[17] Athanasius, prominent early Church Father from the Alexandrian school, constructed his theology of the Trinity as a "consubstantial relation (*homoousion*) between the incarnate Son and the Father, and point the dynamic quality of relationship." Alister E. McGrath, *Historical Theology: An Introduction to the History of Christian Thought*, (Oxford: Blackwell Publishers, 1998), 49-50.

[18] It should be understood that Athanasius's theology of the Trinity is that of a that there is mutual indwelling of the Person qua *perichoretic* union or economic Trinity (*oikonomia*) Trinitarian relations. Saw Hlaing Bwa, "Thomas Forsyth Torrance: A Bridge-Builder Between Theology and Natural Science" (PhD diss., University of Regensburg, 2003), 63-66.

God, for the church leaders of this school, was also believed to a Trinity but focused on the Godhead over the individual Persons. In a clear clarification of the teachings of the two schools, the following points are analyzed.

The Schools of Alexandria and Antioch

Alexandrian School	Antiochene School
Tendency toward Platonic metaphysical approach; a desire to move beyond appearances to the "truly real."	Tendency toward Aristotelian stress on concrete realities, factual historicity and its analysis, and discernable characteristics of concrete reality.
Favors an allegorical reading of scripture, first proffered in a notable way Origen; driven by a desire to "get to the real meaning" of given biblical passages.	Favors a historical/factual, [viz] "literal," reading of scripture.
With regard to Christ, a tendency to focus on inner metaphysical composition and activity.	A tendency to focus upon the factual/historical aspects of the human life of Christ—what he did, said, accomplished, etc. cf. Theodore's exegetical interest in the "historical Jesus."
Soteriological convictions driven most often by notions of sanctification/divinization, mystical relation, etc.	Soteriological convictions driven by corrective agency of divinity on humanity.
Generally, laid stress upon the ontological oneness of Christ—the divinity and humanity form one being—wrought most often by reference to the Logos/sarx framework (though not always; cf. Cyril of Alexandria).	Generally, laid stress upon the distinction between God and man in Christ—these are not only distinct in discernable attributes, but in substantive reality. Preservation of full reality and integrity on both natures. Logos/Anthropos model predominates.
Key weakness lies in the routine jeopardy into which the persistent distinction of natures is cast in the maintenance of the single ontological reality of the incarnate Christ.	Key weakness lies in the difficulty in expressing the genuine union of the two natures, and indeed the true oneness or singular subjectivity of the incarnate Christ.[19]

[19] "Alexandria vs. Antioch Schools," STUDYLIB, accessed August 12, 2020, https://studylib.net/doc/6922289/alexandria-vs.-antioch-schools.

According to Hubler, Justin Martyr (c. 100-165) is described as the earliest Patristic Father who talked about creation. He provides a Greek-to-English translation of the teaching of Justin Martyr regarding what Plato had purportedly learned from Moses in the middle of the second century:

> Hear what was spoken by Moses himself, who as has been shown, was the first prophet and earlier than the authors of Greece, in order that you may learn that Plato received from our teachers (which we say by the word given by the prophets) the saying that God formed the world by rotating (strephavta) matter which was formless. Through Moses, the prophetic spirit revealed how God fashioned the principle (arche) and from what things he fashioned the cosmos. He said, "In the beginning God made the heaven and the earth. The earth was invisible and unestablished and darkness was on the abyss and the spirit of God bore itself over the waters. And God said, 'Let light come about,' and thus it came about." Thus, by the word of God, the whole cosmos came about from the substrates which were first set forth by Moses and Plato. (1 Apology 59, 1-5) Since it was the first day on which God created the cosmos by turning darkness and matter. (1 Apology 67.8)[20]

He remarks that the teaching illustrates the original condition from which the world came to be. It can be understood that the invisible and formless earth was matter and darkness. This sense is also seen in Plato's *Timaeus* (34 A, B 36 E) which shows the Demiurge creating the world: by rotating the world soul, it creates the cosmos. Therefore, similar to Philo, Justin easily interpreted the creation account(s) of Genesis in Platonic terms with respect to matter although the dualism of Middle-Platonist was spreading.[21] And there was no problem regarding creation—no creation out of nothing or absolute nothingness. May identifies Tatian as the confronting follower of Justin Martyr:

> Tatian is the first Christian theologian known to us who expressly advanced the proposition that matter was produced by God. We are concerned here with an idea which sooner or later had to be drawn from the biblical belief in creation, as soon

[20] Hubler, "*Creatio ex Nihilo*," 112.
[21] Hubler, "*Creatio ex Nihilo*," 111-112.

> as Christian thought engaged in a critical debate with the philosophical doctrine of principle.[22]

Although Tatian clearly said that matter comes through the work of God, he did not explain the process. May posits a further explanation that "*ek* and *ov* are notoriously equivocal. *Ek* does not necessarily designate material cause, but it can be used temporally. *Ov* does not necessarily refer to absolute non-being, but the non-existence of what later came to be."[23] Moreover, Philo also combines the doctrines of Logos and Idea, and he uses full subordination to God as the element and the ground of creation for the goodness of the creator. God, in this continuously and actively creating, never rests but goes on perfecting creation. As for His/Her unchangeability, creatures come to change God through creation.[24] Bonting states that Philo sees

> God [as] the essential Being of the world. Together, the powers of God form the *Logos* or divine Reason, which created and rules the world. Through the *Logos*, God is revealed to us. Since the human soul is part of God, the soul can come to know the *Logos* through mystical contemplation…Philo anticipated later Christian doctrine by calling the *Logos* the first-begotten Son of God.[25]

Early Jews and Christians believed and expressed that God creates the world from formless matter.[26] In other words, it is void, (watery) chaos, or disorder. He affirms the beginning of the world as an initial chaos by highlighting the coming of creation stories from ancient religions—animistic, polytheistic, and Jewish monotheistic backgrounds. The two biblical creation accounts in Genesis only show an initial chaos: a watery void in Genesis 1 and a lifeless desert in Genesis 2. According to Bonting's quotation, prominent Old Testament scholar Westermann

> comments that the Hebrew term *tohu wabohu* denotes a state of utter disorder, a threatening chaos, but the various wording used in Gen 1:2, Isa 34:11, and Jer 4:23 indicates that in their prescientific age the authors were unable to conceive of

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[22] May, *Creatio Ex Nihilo*, 150.
[23] Hubler, "*Creatio ex Nihilo*," 120, 110.
[24] May, *Creatio Ex Nihilo*, 18.
[25] Bonting, *Creation and Double Chaos*, 65.
[26] Hubler, "*Creatio ex Nihilo*," 71.

> utter chaos without reference to matter… it cannot be equated with the preexisting, evil matter of the Gnostics, which abstract concept is foreign to the thinking of the authors of Genesis 1 and 2.[27]

Moreover, Father Thierry Magnin and Fabien Revol organize the eleven moods for the biblical foundation of continuing creation as follows:

1. by the word alone (Ps 33:6-9; 147: 4f., 15-18; 148:5; Wis 9:1; Heb 11:3)
2. by the word and then other acts such as separation (Gen 1)
3. by invitation of the other divine persons to participate in the creative process (Gen 26)
4. closer to our subject, God uses raw materials to give rise to new creatures (Gen 2: 7-8, 19; Ps 8: 3, 95: 5). God is a builder and a potter (Gen 2:22). He uses dust (Job 10:8-9; Ps 33:15, 94:9, 103:14). God is a craftsman and a builder (Isa 27: 11, 29:16, 43:7, 44:2, 21, 24;45;9, 11; 64:8; Jer 10:16; Zach 12:1)
5. He also creates by adding order to what already exists, and he acts on a formless matter: "For not without means was your almighty hand that has fashioned the universe from formless matter" (Job 38:4-7), (Gen 1: 2, 9)
6. God creates from nothing (Wis 11:17) (NJB)
7. The naming of the animals is a complementary work of creation on the part of man (2 Macc 7: 22-3; Rom 4:17)
8. The evaluation of the goodness of creation allows God to consider additional works (Gen 2:20)
9. God creates by his Spirit and his breath (Gen 2:7; Ps 104:30)
10. He creates in wisdom, and through wisdom (Jer 10:12; Ps 104:24.; Pro 3:19f)
11. He also creates in combat as can be seen from traces of archaic cosmogonies (Is 27:1; 51:9; Ps 74: 12-17).[28]

There are biblical based interpretations for continuing creation. According to Bonting, both creation accounts—Gen. 2:4b-25 and Gen. 1:1-2:4a—show the initial creation of God to be from a formless, primordial chaos referred to as *tohu wabohu*. Thus, chaos existed before creation began. Biblical scholars define the verses "a formless void and darkness covered the face of the deep, while a mighty wind swept over the face of the waters" (Gen. 1:1-3) and "a lifeless desert" Gen. 2:4-6 as the initial chaos. It is not the preexisting matter taught by gnostics

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[27] Bonting, *Creation and Double Chaos*, 71.

[28] Thierry Magnin and Fabien Revol, "Speaking of *Ex Nihilo* through Continuous Creation," *Creatio ex Nihilo: New Perspectives from Physics, Theology and Philosophy*, (Seoul, South Korea, September 27, 2019). In the author's possession.

nor is it the *nihil* of *creatio ex nihilo*. It can be seen as the creation of the earth from a watery void or sea, as shown in Ps. 24:2. The phrase "In the beginning" in Gen. 1:1is the powerful Word of God to bring forth light on the first day as to the beginning of "time." He quotes Augustine, stating that since there is no time before the world there is no space beyond the world. Because of motion and change, there is time. Time and space is interdependently coming to be after an initial explosion. This condition also shows that time is inside God. Indeed, all created things are within time and space.

So, creatures are not able to know what was before and is beyond the universe, or time and space. Through the allegorical lens of biblical interpretation of the creation accounts, we can only know that at the situation of t=0 that chaos was the condition from which God creates the world. The commanding words of God when creation is being initiated— "Then God said, 'Let there be light'; and there was light" (Gen 1:3)—are not the magic words of Marduk in the Babylonian creation myth, but the powerful Word (*dabar* in Hebrew, and *Logos* in Greek). The echoed phrase in John 1:1-4 can be seen as a cosmological term which reveals the required energy for the initial explosion, rapid inflation, and the critical expansion of the universe. The light should not only be seen as ordinary sunlight but can be seen as the energetic gamma radiation coming out of the Big Bang and the later cosmic background radiation. The three differentiations of "light from darkness, heaven from waters, and land from sea" in Gen. 1:3-10 can also be conceived as time and space, the four fundamental forces (gravity, strong and weak nuclear forces, and electromagnetic force), and their connected particles (electrons, quarks, and

gluons and so on).[29] Critically, they go on to the process of ordering as the heavenly bodies, galaxies, stars, and planets indwelling together by plants, animals, humans, and others or extraterrestrial lives. Therefore, this concept of *creatio continua* cosmologically expresses the concept of continuing creation.[30]

Hubler organizes and translates the New Testament verses from the original written Greek to English, which describes, with a reflection of Near Eastern traditions, the idea of creation from formless matter: "[f]or they willingly forget that the heavens existed of old and the earth was formed from waters and by waters through the word of God" (2 Peter 3:5). John also claims the creation of the world through matter in agreement with Philo, and the Midrash Rabba (chapter 3), and that "[i]n the beginning was the word and the word was with God and the word was God. He was in the beginning with God. All things came about through him and without him not one thing came about, which came about" (John 1:1-3). In this verse, the word takes the role of functions in organizing pre-cosmic matter. There are still many exponent verses for creation out of preexisting matter. The writer of Hebrews states that "[b]y faith we understand that the ages were ordered by the word of God, so that the visible came about from the unmanifest" (Hebrews 11:3). "Because all things in heaven and on earth were created in him, the visible and the invisible; whether thrones or dominions, whether principalities or powers, all things were created through him and for him" (Colossians 1:16). Paul also says that "[j]ust as it

[29] I use "differentiation" instead of Bonting's "separation" because "separation" might make the reader stay, to some extent, under the influence of its judgment. Using "differentiation" sufficiently connotes "separation" in the sense of inter-connections. Moreover, cosmological entities occur as interconnectedly organic societies in differences (for example, if the weak nuclear force is broken, then the rest of the entities are also affected).

[30] Bonting, *Creation and Double Chaos*, 95-96.

is written, 'I established you as the father of many nations,' because he trusted in God who raises the dead and calls the non-existent as existent" (Romans 4:17).[31]

In a further study, an interesting description of a differently unique gnostic group is also found. May specifies and describes the first Christian gnostics, Basilides and his son Isidor, who belonged to a different gnostic system of that era. He points out that Basilides' usage for creation "in the beginning there is the pure, ineffable Nothing…. [he] equated this original Nothing with God."[32] He continues:

> The cosmology of Basilides differs fundamentally from the teaching of the other gnostics. According to the prevailing view, at first only the heavenly world unfolds and only through the rebellion and fall of one of the heavenly beings does the cosmos emerge. Basilides, on the contrary allowed the whole of reality, from the sonships and the archons down to the terrestrial world, to come potentially into being through the single creative act of the supreme God; it only remains for it to unfold in space and time. No precosmic catastrophe happens, but the whole cosmic process develops according to the original plan of God. Creation results from pure, unconditional Nothing.[33]

It should be noted that Basilides' teachings were expressed by Clement of Alexandria. Interestingly, this concept of "the pure and ineffable Nothing or original Nothing with God" was interpreted as a "non-being" God or supreme God who is exalted over being and over all plurality.[34] Regarding plurality and One (God), Hubler does further research into Plotinus' conception:

> The wholly One must be many, or else it would not be after that One, but it would be that One. It is also not possible that the one after that One be greater than that One, rather it must be inferior to that One. Since the best is One, it must be more plural than the One, for plurality consists in lack of [of perfection].[35]

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[31] Hubler, "*Creatio ex Nihilo*," 107-109.
[32] May, *Creatio Ex Nihilo*, 67.
[33] May, *Creatio Ex Nihilo*, 70.
[34] May, *Creatio Ex Nihilo*, 76.
[35] Hubler, "*Creatio ex Nihilo*," 133.

Indeed, Platonism was the best and essential philosophy in the Mediterranean area in that time when it came to defending Christian belief, understanding its teachings of Scriptures, constructing its identity, encountering other Greek philosophies, and preserving its tradition. In that era of Greek dominance and influence, the allegorical interpretation and explanation of the Alexandrian school was more relevant and crucial in bridging with Platonism especially Middle Platonism, for Christian revelation than was the literary/historical approach of the Antiochian school. Due to interaction with Platonism, Christians could and would unveil the transcendent and immanent God to that world. Even though they were influenced by dualism and held a dualistic perspective regarding soul and body, they were enabled to accept bodily resurrection and maintained the legacy of God's continuing creation through initial chaos or pre-existing matter (as handed down from the Hebrews and biblical traditions).

Bonting highlights the prominent Christian apologists and Platonists who handed down their legacy: Justin Martyr; Clement of Alexandria (c. 150-215); and Origen (c. 185-254). Origen's synthesizing of Christianity and Middle Platonism most notably influenced both sides at the Councils of Nicaea (325) and Constantinople (381). The Christian Platonists were: Augustine (354-430); Anselm (1033-1109); John Duns Scotus (1264-1308); G.W.F. Hegel (1770-1831); and Alfred North Whitehead (1861-1947) who developed process philosophy/theology.[36]

As an additional remark of this section, *creatio continua* is the original and true Judeo-Christian concept of creation. The limited and narrow Antiochene method of literary and grammatical interpretations for the theology of creation is inadequate. In contrast, the allegorical explanation and knowledge of the Alexandrian method for the theology of creation is essential.

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[36] Bonting, *Creation and Double Chaos*, 65.

This school of thought for constructing the theology of creation was practically believed, accepted, and used. This tradition shows that interacting differences is inevitable in our daily experiences which construct and evolve ones' identities. According to the Alexandrian tradition shown above, creation is not only for a merely religious work but also the philosophical, political, economic, social, and scientific matter for human beings who love wisdom and knowledge (or enlightenment). It is *oikological,* or ecological. Religion itself is also a matter of becoming by interacting with others. Related to this legacy and belief in *creatio continua* handed down by early church fathers, I would provide a deeper defense of continuing creation by posting a short introduction to process theism and its related constituents.

C. Process Theism and its Constituents

By my estimation, process philosophical theology is the best system for explaining *creatio continua*. It is the only domain of knowledge which is composed of the strongest qualities for bridging betwixt and between differences. It enables sharing among ones such that those involved become more enriched by partaking the food of philosophies/theologies offered at the table of hospitality. The process-philosophical theological notion of creation is completely opposite from *creatio ex nihilo*. One reason for such a radical departure from this doctrine of creation is the process position on God.

1. God the Co-Creator

Compared to the traditional doctrine of God, the process God is completely different from the God of *creatio ex nihilo*. The process-relational God is a co-suffering as well as a co-

creating God in the primordial nature and the consequent nature of God,[37] respectively: creator and creation are interconnected. David Ray Griffin clarifies by stating that

> Process theism distinguishes between God and the aboriginal power of the universe, which it calls *creativity*. Creativity is not a thing or being. It is simply the ultimate activity that all concrete actualities embody. Like Aristotle's "material cause," it cannot exist apart from concrete beings that embody it. Unlike Aristotle's material cause, however, it is not passivity; and it [is] embodied by all concrete beings, including God.[38]

Creativity is the primordial energy and can be called "uncreated freedom." It has a twofold power: "(1) to create or determine itself on the basis of creative influences received from others and then (2) to be a creative influence on the self-creation or self-determination of subsequent individual."[39] Moreover, since creativity is *embodied*, and embodied *by a multiplicity*, there is continual oscillation between the one and many.[40] He continues by claiming that God's creation is not from absolute nothingness but from relative nothingness (Berdyaev's term) which is a prior and produced divine activity: "God is the only primordial, omnipresent, all-inclusive embodiment of creativity. God is the only one who characterizes with perfect love. This love is twofold: God's active ongoing, creative love, and God's receptive, responsive, sympathetic, compassionate love."[41]

Far from controlling the world, God is the source of the world's freedom to become with/in new possibilities. Apart from the God of novelty, there is no relevant creativity. Indeed, God and the world are (inter)dependent upon each other. In this process-relational concept of God, S/He[42] powerfully relates to creatures and enables them to respond creatively. God is,

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[37] I provide a more thoroughgoing explanation of the concept of God in the following chapter.
[38] Griffin, *Evil Revisited*, 22.
[39] Griffin, *Evil Revisited*, 22.
[40] Griffin, *Evil Revisited*, 22.
[41] Griffin, *Evil Revisited*, 23.
[42] In the mode of personal relationship, any pronoun is useable; unlike the traditional God, God as understood in process theism is beyond the construction of gender.

unlike the traditional concept of God, not a "supernatural" entity who breaks, intervenes, and interrupts all the laws of nature.[43] As Alfred North Whitehead says "God is not to be treated as an exception to all metaphysical principles, invoked to save their collapse. He [sic] is their chief exemplification."[44]

According to Whitehead, God's existing with/in the world is a comprehensive system of reality. In a certain respect, God is individual; however, S/He also lives by the same basic set of principles existing in the world. As the fact of freedom shown in novelty, there is divine interaction with the world. God is conceived as the only actuality in whom all possibilities—including the unactualized—reside to become in the world. Every event or each single momentary drop of experience is a two-fold experience of God and the past, actual world. Through these relationships, it creates itself, becoming out of and providing new drops of experience with many possibilities to continuously become. Due to the conditioned novelty that all possibilities are living in God, S/He is also primordially experiencing all the possibilities, now and forever. In other words, since God is part of the relational process through His/Her consequent nature, not only does each single drop of becoming experience God but God also experiences ever drop of becoming. Indeed, God's infinitely complex experience forever constitutes the actual world in every moment of becoming.

In this way, God is good: S/He shares all the experiences of creatures such as pain, sorrow, joy, hope, desperateness, despair, failure, and success. Unlike the absolute and *im*partial, *dis*interested and distant God of *creatio ex nihilo*, the process-relational God is an "*omni*-partial"

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[43] Mesle, *Process-Relational Philosophy*, 84.

[44] Alfred North Whitehead, *Process and Reality: An Essay in Cosmology*, Corrected Edition, ed. David Ray Griffin and Donald W. Sherburne (NY: The Free Press, 1978), 343.

and completely interested participant in the relationship of love.[45] Whitehead states that, "[b]y the reason of this reciprocal relation, the love in the world passes into the love in heaven, and floods back again in the world. In this sense, God is the great companion—the fellow-sufferer *as well as co-creator* who understands,"[46] feels every creature in His/Her infinite patience in the consequent nature,[47] and enables them to together arise with/in new actual entities in the process of becoming into the open future.

This process-relational concept of God the co-creator is necessarily demanded in this ecological turmoil of the world. The concept of God is crucial for building systems and structures, mental model, power, and so on. What most influenced characterizes in daily experiences mentally or physically.

2. System and Structure

Process philosophical theology is developed from the connected ground of science such as physics and biology,[48] but systems thinking is equally necessary. Bwa defines "system" as follows:

> A "system" is an entity that maintains its existence and functions a whole through the interaction of its parts. Systems are purposeful, open, counterintuitive, multidimensional, and have emergence properties not found in any of its parts by themselves. Systems behave not in a linear dimension of the law of cause and effect, deterministic and mechanistic, but in a non-linear dimension of the law of chaos and complexity, uncertainty, and emergence, because systems are not static. Systems have life their own [organic], dynamic and relational.[49]

Donella Meadow gives an example of systems in the human body: the elements and entities of digestive system include teeth, enzymes, stomach, and intestines through the physical flow of

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[45] Mesle, *Process-Relational Philosophy*, 85.
[46] Whitehead, *Process and Reality*, 351. Italics are mine.
[47] Whitehead, *Process and Reality*, 346.
[48] Whitehead, *Process and Reality*, xii.
[49] Bwa, "Systems Thinking," 3.

food and its regulating chemical signals. This system functions to digest food into nutrients and to transfer them into another different system (i.e. the bloodstream) while, disposing of unusable wastes products. Similarly, a football team, a tree, a school, a city, an animal, a factory, information, and so on are similar systems. Sometimes, systems are merged and submerged in systems or other systems, and nested within systems.[50]

The Trinitarian God of Christianity, according to systems thinking (using James Clark Maxwell's work electromagnetic field as an illustration),[51] is conceivable as a trinitarian-relational God: the Father, the Son, and the Holy Spirit are interconnectedly indwelling in a perichoretic way of mutually immanent indwelling. It is an economic Trinity insofar as they maintain the inseparable unity of the "economic activity of God in the Spirit and his [sic] economic activity in the Son."[52]

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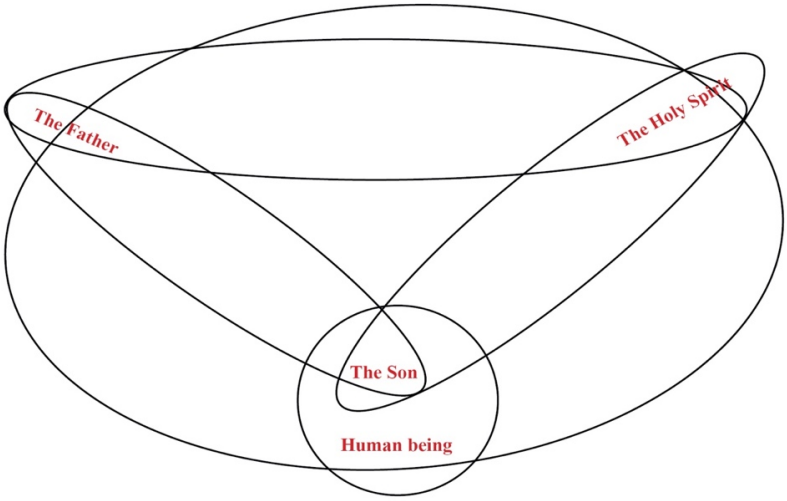
[50] Donella H. Meadows, *Thinking in Systems: A Primer*, ed. by Diana Wright (Vermont, VT: Chelsea Green Publishing, 2008), 20-3.

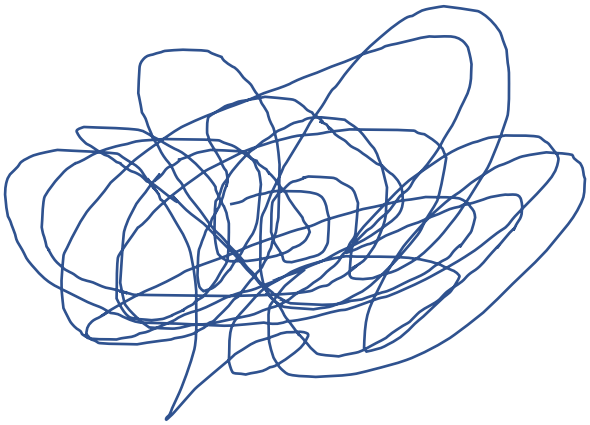
[51] Saw Hlaing Bwa explains that Maxwell developed, from Faraday's discovery, a mathematical theory which represents electric and magnetic fields, the two fields which fill all space when charges or magnets are present. All electric and magnetic phenomena and their relations can be understood by the presence of these two interacting fields. His theory leads to a far-reaching insight that changing magnetic fields generate electric fields, and changing electric fields can generate magnetic fields. Consequently, a self-perpetuating cycle of electric and magnetic fields occurs when a disturbance in one field affects the other field. This means that a disturbance in the fields can take on a life of its own. It is not affected by any external force, i.e. from charged particles, in order to keep the process going. Hence electric and magnetic fields are self-subsisting, i.e., they have the reality of their own apart from the matter that creates them. This dynamic disturbance stands for the integration of electric and magnetic fields, viz. namely the electromagnetic field. Saw Hlaing Bwa, "Thomas Forsyth Torrance: A Bridge Builder Between Theology and Natural Science" (PhD diss., University of Regensburg, 2003), 115.

[52] Bwa, "Thomas Forsyth Torrance," 223.

Picture 1. A Model of the Trinitarian Relational God or Christian Faith in the Trinity[53]



Picture 2. The interconnected web of life/lives for all creatures.



In this ecologically interconnected and systemic web of the Trinitarian relational God, both sentient and nonsentient creatures are kin. They present in intricacy, complexity, and diversity not only at the macroscopic and middling levels but also at the microscopic level with/in the

[53] Saw Hlaing Bwa illustrates this organically interconnected web of the Trinity for Christian faith to see the systems of the world. Saw Hlaing Bwa, "Democratization in Myanmar and Christian Citizens" (lecture), Advanced Leadership Training, Myanmar Baptist Convention (MBC) Leadership Development, November 24, 2020, Facebook, November 30, 2020, https://www.facebook.com/sawhlaing.bwa/posts/3552812131492948.

realm of infinite difference. Nothing exists separated from other creatures. Nothing exists as an island with/in the complex network of interconnectedness.[54] For instance, the seven days of creation in the Bible—the day and night, the earth and sky, the plants and animals—can be conceived, in a personally relational sense, as the older brothers and sisters of human beings who are the late comers in the evolving process of creation. They partake of each other for their living through the way of interactions in the web of life (or creativity) with each respective value—as family or familial model of a web of love. It is not a top-down structure. Additionally, Bwa remarks that "systems thinking *or such systemic web of interconnectedness* can be discerned in the Buddha's law of interdependent co-origination or (Pratiyasamutpada *in Sanskrit or Paticcasamuppada in Pali*) for seeing and interpreting our experiences by focusing on the relationships."[55]

3. Mental Model

Our mental models shape arising systems and structures. Grounding our lives on these mental models, human beings construct systems and structures. As Bwa states,

> [m]ental models are deeply held internal images of how the world works, images that limits us to familiar ways of thinking and acting. Very often, we are not aware of our mental models or the effects they have on our behavior. Mental models are subtle but powerful. Subtle, because we are usually unaware of their effects. Powerful, because they determine what pay attention to, and therefore what we do. Mental models are strongly conservative: left unchallenged, they will cause us to see what we have always seen: the same needs, the same opportunities, the same results. All because we see what our mental models permit us to see, we do what mental models permit us to do.[56]

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[54] McFague, *The Body of God*, 55-63.

[55] Bwa, "Systems Thinking," 4. Italics are mine.

[56] Peter M. Senge, *The Fifth Discipline: The Art and Practice of Learning Organization* (Doubleday: 1994), 8; quoted in Bwa, "Systems Thinking," 4.

In terms of creation, Australian biologist Charles Birch and theologian John B. Cobb, Jr.—the father of process theology—both adhere to an ecological model. They explain that, when examining the constituent elements of a system or structure, they are not mechanical because each layer of them is operating in ways of interconnectedness. Every element, components of living things, and living things themselves exist as parts of a system (or a system of systems), and they behave as they do because of having the quality of relations to other elements with/in a whole, which is called 'internal' relations. In other words, it is a systemic interconnection of events.[57]

By criticizing the theology and mental models formed by the modern Western system, Bwa also specifies and affirms an "Organic" mental model. It recognizes and respects diversity and dynamicity, chaos and complexity, differences, flexibility, interrelatedness, and cooperation rather than valorizing competition. This mental model not only values process, plurality, relationship, change, but also a non-linear expression of cause, effect, and of authority because it is dialogical rather than dictatorial. Contrary to monarchical and mechanic mental model of God as King, as Judge, Supreme Ruler and Controller with absolute authority as the dictator of the whole creation, the organic, process-relational model of God, through Jesus Christ, is as kin and relative—like a parent who cares for, loves and shows mercy to all creatures. In contrast to the hierarchical model, this process-relational model enables the creation of a space for interconnection, cooperation, and responsibility in democracy. This mental model also makes us children rather than servants, friends rather than enemies, and co-workers rather than mere

[57] Charles Birch and John B. Cobb, Jr., *The Liberation of Life: From Cell to the Community* (London, UK: Cambridge University Press, 1981), 83.

workers for our loving God.[58] These relational co-indwelling systems symbolize an organically familial and kin community of both sentient and non-sentient beings in the multi-universe.

4. Power

The power of process theism is a relational power. As Mesle describes, based on the primordial and consequent natures of God:

> God's power is infinite, everlasting, and universal…[it] enables all of reality to continue its creative advance, that makes creatures free, that shares the experience of every creature and is experience by every creature. God's creative power sustains the universe. So, God's power is infinitely greater than ours, and very different. Yet, it is only through the creatures of the world that God has hands.[59]

He continues, quoting Bernard Loomer, by saying that it has the quality of affecting and being affected by others. Moreover, he formulates process-relational power with three components: "(1) the ability to be actively open to and affected by the world around us; (2) the ability to create ourselves out of what we have taken in; and (3) the ability to influence those around us by having first been affected by them."[60] If one or a system is closed to being affected by others, s/he or it is just existing as if dead, and turns into weak ones so that vulnerability through being controlled, manipulated, and coerced occurs. If being affected by others, one or a system has strength to be actively open by being engaged and enriched through the relationships of the world. In other words, relational power is a shared power. It enables us to listen patiently, to be actively open, and to look at the whole together with parts, then to respond, with respect to others' rights, in love, compassion, patience, and imagination like parents providing care to their children. Although relational power demands working hard, a lot of patience, self-control,

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[58] Bwa, "Systems Thinking," 5.
[59] C. Robert Mesle, *Process Theology: A Basic Introduction* (St. Louis, MO: Chalice Press, 1993), 14.
[60] Mesle, *Process-Relational Philosophy,* 73.

emotional energy, and willingness, the reward is greater, deeper, more fruitful, and more mutual than coercive power.[61]

Relational power builds between others, including God and nature, whereas unilateral power estranges and destroys them. Relational power creates equality and justice, interdependent friendship, care and concern persuasively unilateral power coercively causes oppression, brokenness, domination, and enmity. Relational power breeds cooperation, responsively leading to continuing life but unilateral power leads to competition which results in destructiveness and death. Relational power functions persuasively, responsively, creatively in love and patience, but unilateral power is deadly, functioning coercively, compulsively, and in anger and greed. Mesle continues to say that, in relational power,

> you actively listen to the concerns and values of others, you also bring your own best judgment to bear in deciding who you will be in this relationship, what you want to contribute out of your own wisdom, how you want to change yourself and your values in the face of new experiences, and what you want to contribute to the relationship that may shape others involved.[62]

Additionally, relational power enables self-creativity by interrelating in the ecological web—not only with/in human communities but also beyond human communities or providing the space for interrelating with/in other communities with freedom.[63]

5. The Problem of Evil

Due to the quality of the essentially shared power of the process conception of God, the problem of evil is solved because God does not take unilateral power and determine all. God's power is not manipulative but is an evocative power. God lures creatures who are interdepending

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[61] Mesle, *Process-Relational Philosophy,* 73-76.
[62] Mesle, *Process-Relational Philosophy,* 76.
[63] Mesle, *Process-relational Philosophy,* 76-78.

on their respective power and works by evoking responses with/in pluralities and multiplicities to be the most effective. Process theism responds to the existence of evil by asserting that the supreme power of the world is perfectly good even though it is not the sole power because there is creaturely freedom and causation. The power is exerted by human beings and all other individuals down to the most primitive. Personal evils, physical evils, and systemic evils arise due to the freedom and power of self-determination or self-creation of individuals in the web of interconnectedness of chaos and complexities in pluralities and multiplicities. Natural evils can also be caused due to creaturely decisions. For instance, human beings can exercise the power to control, shoot, murder, rape, stop, and so on (by hands) within limits, but God is not like human beings who can twist their hands and arms. Surely God does not unilaterally manipulate and monopolize on the shared power of individuals.

Still, this does not mean that God is indifferent. According to God's power sharing policy, His/Her power is different because God's power is creatively responsive in luring and persuading. God does not also hold coercive power as persuasive. Actually, this luring and persuasive power can only be exercised in relations to other souls or minds and also in relations to our own bodies in which billions of powers are constituted. Since God has no body and hands, the world is like the whole body or organism of God. There is no divine body between God and our bodies because S/He is the soul of the world. In other words, God is essentially related to the world. God and the World, thus, require cooperation. In a cooperative way, creatures realize that the possibility of genuine evil is necessary due to the creative power of the world being good or for divine continuing creation.[64]

[64] Griffin, *Evil Revisited,* 23-26.

D. Summary and Evaluation

A way of reconciliation between Christianity and Buddhism is found through the concept of *creatio continua*: the original belief born in the common era, derived down from Judaism, developed during the Patristic period, and handed down to Christian world. It is biblically, philosophically, and practically theological. The concept of a co-creating God in process philosophical theology reveals the interconnections of entities in continuing creation similarly with how the Theravada Buddhist's *paticcasamuppada* does. Systems thinking, in the quality of process-relational philosophical theology, is likewise scientifically enriched by the discernment of worlds through *paticcasamuppada*. Continuing creation in process theology points out self-creation in the same way *Theravada Abhidhamma* stands on self-determination. The idea of continuing creation *qua* creativity as described in Whitehead's metaphysics is ecological, just like what and how *Abhidhamma* empirically analyzes, and discerns the natural laws through *paticcasamupada*. It is especially relevant for the Christianity in a majority Theravada Buddhist context and society. Together with the strength of bridgeable similarities between them, I continue with a broader study of the idea of continuing creation as creativity in process philosophical theology by focusing on Whitehead in the following chapter. What we discover is what will learn in the next chapter.

CHAPTER THREE

A PROCESS PHILOSOPHICAL THEOLOGY OF CONTINUING CREATION

In the previous chapter, I argued that a theology of continuing creation allows us to bridge the central concern of Buddhist and Christian thinkers while preserving what is most essential to each tradition. In this chapter, I wish to deepen the theory of continuing creation. I will argue that process theology provides resources for developing a more rigorous and satisfying notion of continuing creation than what was described in the previous chapter. In order to do this, this chapter is composed of a brief background of process philosophical theology, creativity, prehension, and God-World relationship. The reader will, after knowing these three related concepts of process thought, also conceptualize continuing creation by comparing it with evolution in Natural Science and reality as discerned in Theravada Buddhism. Indeed, the wisdom what process thought acknowledges is "interrelatedness." Thus, the quality of process relationality is the reason why I choose to connect the concept of continuing creation in the three different domains of Christianity, Natural Science, Theravada Buddhism.

A. A Brief Background of Process Philosophical Theology

Roland Faber differentiates multiple forms of process theology, process theology from the Chicago School (S. Matthews); Alfred North Whitehead's ecological doctrine of God; an empirical method for approaching process theology (H. Wieman, H. Meland, D. D. Williams); a neoclassical view of God (C. Hartshorne); theological naturalism (B. Loomer); existential ways of process theology (S. Ogden, J. Cobb); speculative process theology (L. S. Ford, J. Bracken,

M. Suchocki); and postmodern process theology (D. Griffin, C. Keller).[1] Using a selection of these authors, this chapter will discuss mainly Whitehead's ecologically oriented process theology. The reader will first see a brief introduction about this process philosophical theology. Second, a short explanation of Christian process theology is added. Third, a process theology of continuing creation is explored through the three interconnected topics of creativity, prehension, and God-World relation.

Faber remarks on Whitehead's ecologically-oriented process theology as follows:

> Process theology is the soteriological articulation of a universal 'cosmology' ("general theory of the world as a whole") as developed by Alfred North Whitehead, that is, as an examination and elucidation on the world with regard to its meaning as a whole and with an eye on the possibility of universal reconciliation. The systematic efforts of process theology to this and examine varied philosophical and theology traditions of the West, together with more recent results of the natural sciences (quantum physics, the theory of relativity, the theory of evolution) and with Eastern thought (especially Buddhism). In a programmatic sense it thus develops new, interdisciplinary, nondualistic categories based especially on the nature of all reality as a process of becoming and as characterized by events.[2]

Process thought, first and foremost, is a relational philosophical theology.[3] Particularly, it is a systematic metaphysics consistent with an evolutionary and multi-layered view of nature. In his metaphysical system, he applies different concepts in the world equally to particles and persons, as well as everything in-between. His formulation is an inclusive conceptual initiative sufficiently applicable to all entities in the world. Indeed, Whitehead's metaphysics, and process thought more generally, departs significantly from the traditional flow of Western thinking. The

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[1] Roland Faber, *God as Poet of the World: Exploring Process Theologies*, trans. Douglas W. Stott (Louisville, KY: Westminster John Knox Press, 2004), ix.

[2] Faber, *God as Poet of the World,* 9.

[3] Given that the essence of process philosophy is interconnectedness, "process philosophical theology" and "process-relational philosophical theology" will be used interchangeably in later paragraphs and pages.

study of process philosophy/theology in its methods, themes, and applications is based on Whitehead's "philosophy of organism."[4]

Whitehead's metaphysics is a speculative philosophy. He highlights how speculative philosophy is a method which produces crucial knowledge, pointing out that speculative philosophy is "the endeavor to frame a coherent, logical, necessary system of general ideas in terms of which every element of our experience can be interpreted."[5] He extends our understanding of the term "interpretation" to include everything of which we are conscious, such as what we enjoy, perceive, will, and think, to describe the character of a particular example within a general scheme. Therefore, he affirms that any philosophical scheme, to be coherent and logical, must be applicable and adequate with respect to this broad interpretation. It should be noted that by "applicable" he means that there are some items of experience which are able to be interpreted, and by "adequate" he means that there are no items which are unable to be interpreted.[6]

When speaking of "coherence," Whitehead posits the fundamental ideas about ideal speculative philosophy: when entities are separated or isolated they are indefinable and meaningless because no entity is capable of metaphysical abstraction from any other, nor can they be conceived in complete epistemic abstraction. In other words, this is the notion of speculative philosophy as well as the business of it to make the truth known.[7]

Whitehead highlights how "the term 'logical' has its ordinary meaning, including 'logical' consistency, or lack of contradiction, the definition of constructs in logical terms, the

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[4] Whitehead, *Process and Reality,* 7.
[5] Whitehead, *Process and Reality,* 3.
[6] Whitehead, *Process and Reality*, 3.
[7] Whitehead, *Process and Reality*, 3.

exemplification of general logical notions in specific instances, and principles of inference. It will be observed that logical notions must themselves find their places in the scheme of philosophic notion."[8]

What we should keep in mind is that the ideal speculative philosophy has rational and empirical parts. The rational part is expressed by the terms "coherent" and "logical," while the empirical part is explained by the terms "applicable" and "adequate." The matter to keep in mind is that both sides, the rational and empirical, are bound together. Whitehead notes that, based on the degree or quality of "communication," there are things which are unknowable, and he also remarks that the unknowable is unknown. We can infer that, without having communication, it is unknowable or it is unknown, or by communication it is knowable or it is known. Overall, he uses an instance of the observation of an elephant to explain his speculative philosophy.[9] I will share a childhood story to make this clear, "six blind men and an elephant." Due to their different degrees of communication and imagination in observing the elephant in terms of various parts of the elephant's body, they expressed what an elephant looks like. Their expressions are varied. The first one who observes the tail says that it looks like a snake; the second, a hand fan for the ear; the third, a tree trunk for the leg; and so on. Indeed, the whole body of the elephant is known only by coherently and logically seeing or binding all parts of it together. However, even unknowable parts still remain.

Furthermore, Whitehead also adds the method of discovery which is used in the study of natural science. It is "like the flight of an aeroplane [sic]. It starts from the ground of particular observation; it makes a flight in the thin air of imaginative generalization; and it again lands for

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[8] Whitehead, *Process and Reality*, 3.
[9] Whitehead, *Process and Reality*, 3-4.

renewed observation rendered acute by rational interpretation."[10] As physics, physiology, psychology, aesthetics, ethical beliefs, sociology, and languages are storehouses of human experiences, they are tested to be applicable. In this way natural science shows an interesting mixture of rationalism and irrationalism: it means natural science is passionately rationalistic within its own boundaries, and dogmatically irrational beyond their boundaries.[11]

By this speculative method, Whitehead constructs his theistic metaphysics which is his *magnum opus* called *Process and Reality*. Ian G. Barbour recommends that Whitehead's purpose for process philosophy is

> to have a coherent position of concepts in terms of which every element of experience could be systematically interpreted and organized; and to establish a system of idea which bring aesthetic, moral, and religious interests into relation with these concepts of the world which have their origin in natural science.[12]

In Whitehead's thought, time and process are constitutive of all reality. Based on "experience," reality is not static but dynamic, organic, and social. The world is a creative process, a movement composed of interrelated entities and societies.[13] Reality is thus a relational as well as social process.[14] The conjunction "and" of *Process and Reality* can be interpreted as *relation* or *connection*. In looking to process-relational philosophy as a bird's eye view, "becoming" is more important than "being." "Change" is the basis for transition and activity, perishing and becoming.

The fundamental components of reality, actual occasions or actual occasional experiences or actual entities, are interrelated as dynamic events and varying in degree of complexity.[15] Each

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[10] Whitehead, *Process and Reality*, 5.
[11] Whitehead, *Process and Reality*, 5.
[12] Barbour, *Religion and Science,* 284.
[13] James C. Livingston and Francis Schüssler Fiorenza, *Modern Christian Thought*, vol. 2, *The Twentieth Century*, 2nd ed. (Minneapolis, MN: Fortress Press, 2006), 313.
[14] Mesle, *Process Theology,* 8.
[15] Barbour, *Religion and Science*, 285.

actual occasion as a momentary event is partially self-created and partially influenced by other occasions,[16] and they give rise to other new related events. This is what Whitehead claims as the most crucial and original concept for his metaphysics. He calls this "prehension" which is the way one actual entity becomes incorporated into another in the multiplicity of unpredictably complex events. This is to say that any becoming occasion prehends its past and that all occasions are alike. In other words, in prehension or "causal efficacy," earlier experiences immanently and prehensively take part in constituting all unit events or actual occasions within the present new occasions of experiences, both positive and negative, in the process of concrescence.[17] Moreover, prehension is a way of transmitting feelings—"an initial stage of many feelings, and a succession of subsequent phases of more complex feelings integrating the earlier simpler feelings."[18] This is true not only for human beings but also cellular, molecular, and quantum events. The uniqueness of process philosophy is that every actual entity or actual occasion is dipolar:

> With [the] physical pole the actual entity feels or prehends the physical reality of other actual entities, and with the mental pole it prehends the 'eternal objects' by which actual entities have conceptual definiteness. By prehending each other, actual entities are internally related (instead of externally related, as in materialistic or mechanistic philosophies). This means that the entities are not isolate or independent beings but are present in other actual entities are interrelated moments of an ongoing process.[19]

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[16] D. W. Diehl, "Process Theology: Process Theism," last updated October 13, 2021, http://mb-soft.com/believe/txn/process.htm.

[17] Whitehead, *Process and Reality*, 220-221.

[18] Whitehead, *Process and Reality*, 220.

[19] Diehl, "Process Theology: Process Theism."

Further, C. Robert Mesle explains that "each new drop of awareness is incredibly complex, composed of thoughts, feelings, sensory experiences, and deeper feelings of being surrounded by a world of causal forces."[20]

In a summary of process philosophy, there is unpredictability in the open future which is full of indeterminacies, potentialities, and possibilities for reality. The world is a causally interrelated web of events which are essentially interdependent, interwoven, and interrelated with mutual relations and participations in their becoming. Reality is seen as an organic process which changes temporally, and it is interconnected in activity through the integrity and dynamicity of the interdependent events of cultures, societies, religions, politics and so on in communities and societies where individuality is an interaction and unity. Further, in the uniqueness of diversity and plurality, every entity or individuality has its own self-creation, self-causation, or self-determination by taking account of responding and reacting spontaneously to others in order to contribute its distinctiveness to the world, then to final causation in persuasiveness. Hence, God is the primordial ground of order in whom there are possibilities for the actualization of order in relations to potentialities in whom they are realized without violating or determining the new self-creation of individual entities; in fact, God is the ground of novelty by valuing and affecting experience.[21] What process philosophy prizes is the relation on relational state "betwixt," "between," "beyond," and "among" because phenomena and change come out of relations or interactions.

Related to the short introduction of process philosophy above, a brief introduction to Christian process theology is important because it is deeply rooted in the outcome and

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[20] C. Robert Mesle, *Process Relational Philosophy: An Introduction to Alfred North Whitehead* (Philadelphia, PA: Templeton Foundation Press, 2008), 7.

[21] Barbour, *Religion and Science*, 286-287.

nourishment of process philosophy. Indeed, process theology comes from the theistic metaphysics developed by Whitehead and modified by Charles Hartshorne,[22] based on the philosophy of organism of organisms, the uni-multiverse, with a vision as an ongoing expression of interrelatedness and integration.[23] John B. Cobb Jr and David Ray Griffin clearly affirm that "process theology operates on the one side from the perspective of Christian faith and on the other in the metaphysical context provided by process philosophy and its doctrine of God."[24] Thus, according to the process matter "interrelation," a quality of inseparability of secular and sacred dimensions is seen as an enrichment in process theological studies. Every entity in this process-relational thinking and in the universe is thoroughly interconnected and dynamically interdependent, that everything matters, and everything has an effect.[25]

What matters most is that God[26] is dipolar or has two natures: a 'Primordial' or transcendent nature which is timeless perfection of character; and a 'Consequent' or immanent nature by which God is part of the cosmic process in which God is integrally involved in the endless process of the world.[27] I will elaborate for Hartshorne on these two aspects: on one hand, the abstract essence of God is eternal, absolute, independent, and unchangeable; on the other hand, the concrete actuality of God is temporal, relative, dependent, and constantly changing.[28]

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[22] Marian Hillar, "Process Theology and Process Thought in the Writings of Michael Servetus," Annual Meeting Presentation of the Sixteenth Century Studies Conference, San Antonio, TX, (October 24-7, 2002): 3, accessed June 18, 2020, http://www.socinian.org/files/ProcessTheologyTalk.pdf.

[23] John R. Mabry, "Hegel, Whitehead and Chardin: Trailblazers of a New Cosmology," (1993): 5, accessed June 18, 2020, http://www.apocryphile.org/jrm/articles/process.html.

[24] John B. Cobb Jr and David Ray Griffin, *Process Theology: An Introductory Exposition* (London: Westminster John Knox Press, 1976), 41.

[25] Marjorie Hewitt Suchocki, "What is Process Theology: A Conversation with Marjorie," Process & Faith (2003): 3, accessed June 18, 2020, https://processandfaith.org/wp-content/uploads/2015/07/what-is-process-theology.pdf.

[26] In the context the word "God" means the ultimate reality. As such, its pronouns are beyond the standard binary gender boundary.

[27] Diehl, "Process Theology: Process Theism."

[28] Cobb and Griffin, *Process Theology*, 47.

In other words, God's known and knowable life is relatively rooted in the essence of God and is inter-relatedly dependent on the decisions of worldly actualities,[29] the relational world to whom and with whom God also relates.[30] Opposite to the classical and traditional conception of God, the God of process theology is a relational God. This means the existence of God must be in relation—relation to everyone and everything in numerous and various ways. Relationship is a dynamic process in that existing is being affected by others, and having an effect on others.[31]

"Panentheism" is a term for how process theology understands God. The literal meaning of the word "pan-en-theism" is that "all" (Gk. *Pan*) is "in" (Gk. *En*) God (Gk. *Theos*), but God is not exhausted by the world as a whole (G>W),[32] with the sense of "in" and "through" being the kinds of relations they share.[33] The definition, according to the *Oxford Dictionary of the Christian Church*, is "the belief that the Being of God includes and penetrates the whole universe, so that every part of it exists in Him, but (as against pantheism) that His Being is more than, and is not exhausted by, the universe."[34] John Cobb provides a clear and detailed explanation of panentheism:

> [It is] the doctrine that all is in God. It is distinguished from pantheism, which identifies God with the totality or as the unity of the totality, for it holds that God's inclusion of the world does not exhaust the reality of God. Panentheism understands itself as a form of theism. . . .
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> . . . what happens in the world contributes to the divine experience which in its unity transcends qualitatively and quantitatively the contribution of the world.[35]

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[29] Cobb and Griffin, *Process Theology*, 48.

[30] Suchocki, "What is Process Theology," 5.

[31] Suchocki, "What is Process Theology," 6.

[32] Arthur Peacock, "Introduction," in *In Whom We Live and Move and Have Our Being: Panentheistic Reflections on God's Presence in a Scientific World*, ed. Philip Clayton and Arthur Peacock (Cambridge, UK: Eerdmans, 2004), 19.

[33] Peacock, "Introduction," 7.

[34] F. L. Cross and Elizabeth A. Livingstone, eds. *The Oxford Dictionary of the Christian Church*, 3rd ed. (Oxford: Oxford University Press, 2005), s.v. "panentheism."

[35] John B. Cobb Jr., *A New Dictionary of Christian Theology*, ed. Alan Richardson and John Bowden (London: SCM Press, 1983), 423, quoted in Peacock, "Introduction," xix.

The stronger emphasis placed on the perfection of God while advocating the dipolar theism of Hartshorne is very supportive of a Christian process theological understanding of God rather than "exalting permanence over change, being over becoming, and eternity over temporality, and necessity over contingency, self-sufficient over relatedness."[36]

Process theology can be understood as a philosophical theology of Love. God, as Love, is the unique Subject and supremely related One through whom and with/in Whom all things live and move and have their being. In God's relationality, they share their experiences with/in creatures and being shared by them in persuasiveness. Since the world is a complex web of the relationship of life, experience is also rich and complex.[37] To say here that "God is Love, does not refer to a substance or person but the "relation" or "inter-action." According to the process theology of love, God is seen as creative-responsive love. Given that Christian faith holds that God is love, the divine reality as love as the basic character of God is explained more clearly in process theology than traditional Christian theology. Cobb and Griffin explain the existence of God—God as responsive love, God as creative love, divine creative love as persuasive, divine creative love as promoting enjoyment, and divine creative love as adventurous—based on God as creative-responsive love, that in the existence of God "God is [the] factor in the universe which establishes what-is-not as relevant to what-is, and lures the world toward new forms of realization."[38]

Responsively, God is, as Hartshorne points out, relative in consequent nature and fully actual. God's full actuality is his/her responsiveness to and receptiveness of the world to actualization. This responsiveness is God's partaking in sympathetic feelings with worldly

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[36] Barbour, *Religion and Science*, 294.
[37] Mesle, *Process Theology,* 8.
[38] Cobb and Griffin, *Process Theology*, 43.

beings in love. Creatively, God is actively working to overcome evil and to create new things because of his/her personal presence in the world. This creative activity of God is the expression of his/her divinely creative love. God's creative power of love is to have harmony with equality and justice in the process of creation. Persuasively, God lures entities toward his/her creative process. As God provides an "initial aim" to all entities for them to actualize, God does not control the finite occasion's self-actualization. God creatively persuades every entity for the best possibilities of the future. The "subjective aim" of any entity is the product of his/her own decision. God's divine creative love is for the promotion of the enjoyment of creatures that all actual entities have a degree of enjoyment to be experiencing and enjoying it. Based on moral and ethical development, actual entities are to increase the enjoyment of others because to be moral is, in process thought, to actualize oneself. Enjoyment is a service in relationship because giving service of enjoyment to others increases one's enjoyment. Further, divine creative love is adventurous. As God is the source of order which derivates from novelty, s/he is the source of continuing persuasively for the "Creative Good," that future is open for many possibilities.[39]

In process-relational philosophical theology, God is omniscient insofar as God's knowing is of everything there is to know, but, the future is not fixed and settled, remaining open with many possibilities and probabilities.[40] Interdependently, God self-limits for the sake of actual entities. In other words, God persuasively knows everything together with actual entities because s/he respects the freedom given to them. Without the participation of actual entities or the world, God's omniscience is not holistically complete. In addition, God is co-eternal in that s/he shares the adventure of time with the world and is creatively active in the opening and continuing

[39] Cobb and Griffin, *Process Theology*, 43-44.
[40] Mesle, *Process Theology*, 9.

process. God is also omnipresent in as much as every creature is experiencing God in each moment because God is the ground of the world's becoming. God works and acts with/in the world through continual self-revelation so that entities' experiences are inherently interwoven with the experiences of God.[41] God and the World are co-eternally and continually present for knowing and becoming of creative good in the open future.

God is also omnipotent; however, this is omnipotence is contrasted to the unilateral power holder of traditional theology. The panentheistic God of process thought is relational in their power. As relatedness is the primary matter of process thought, process theology also operates differently on the model of power, reality, and value.[42] Indeed, process relational power is persuasively creative, co-operative, defensive, and constructive while unilateral power is coercively oppressive, competitive, offensive, destructive controlling and manipulates of others. The power of process-relational thinking focuses quality and value while unilateral power sees quantity. In other words, process relational power operates internally to empower entities in patience and persuasiveness. Hence, relational power is soft power, or the power and quality of humbleness, while unilateral power is hard, tyrannical, and bullying. Process relational power has three components:

1. the ability to be actively open to and affected by the world;
2. the ability to create ourselves out of what we have taken in; and
3. the ability to influence those about us by having first been affected by them.[43]

Relational power is the ability to be open and sensitive to the feelings, struggles, fears, and hopes of others in order to be affected by them; to be self-creative by taking part in a range of ideas, feelings, influences, and experiences with/in others and to integrate by self-creativity as

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[41] Mesle, *Process Theology*, 9.
[42] Mesle, *Process Theology*, 30.
[43] Mesle, *Process Relational Philosophy,* 76.

responsiveness because every entity is, indeed, an interconnectedly unified self; and to influence by having been first influenced by others in the relational power of transformation.[44]

According to psychologists, a process philosophical theology of love herein reflects the fullest sense of sympathetic responses to the love that one has toward the feelings of others, hurting with the pains of the others, grieving with them, and rejoicing with their joys. The "others" are the sympathized ones, for example, the cells or the members of one's body—pain, goodness, and health are shared together.[45] Therefore, God in process theology is conceived as a co-suffering God as well as co-creating God.

After being introduced to process philosophical theology, a process philosophical theology of continuing creation will now be discussed. To be conceived about the process philosophical theology of continuing creation, creativity, prehension, and God-World relationship are interconnectedly explored. The relationship between the notions of the three—creativity, prehension, and the God-World relationship—will make help the reader understand the concept of continuing creation.

B. Creativity

Creativity is the first process concept to know because it is the processual whole of its interrelated parts or concepts which will be continuously and relatedly discussing below. Whitehead goes forward with his explanation about philosophy of organism by discussing creativity through four classifications: i) Categories of the Ultimate; ii) Categories of Existence; iii) Categories of Explanation; and iv) Categories of Obligation.[46] Creativity is a viable way of

[44] Mesle, *Process Theology*, 30.
[45] Cobb Jr. and Griffin, *Process Theology,* 44.
[46] Whitehead, *Process and Reality*, 20.

approaching process theology of creation as continuing creation if we are to understand Whitehead's philosophy of organism. Indeed, Whitehead's metaphysics is about creativity as a cosmic reality; at the same time, this creativity is profoundly metaphysical. Creativity is, in the categories of Whitehead, the category of the Ultimate. He states that

> Creativity is the principle of novelty. An actual occasion [event] is a novel entity diverse from any entity in the "many" which it unifies… The ultimate metaphysical principle is the advance from disjunction to conjunction, creating a novel entity other than the entities given in disjunction. The novel entity is at once the togetherness of the "many" which it finds, and also it is one among the disjunctive "many" which it leaves; it is a novel entity, disjunctively among the many entities which it synthesizes.[47]

Moreover, he explains creativity in twenty-seven interconnected ranges. The twenty-seven interrelated series are, through prehensions, nested as a process web in openness—from eternal objects to nexus. In simply speaking, this processual series of creativity is the explanation from minutest energy events to massive ones in the multi-universe through inter-relations and transformation. I put here, as examples, three ranges of the twenty-seven to be able to compare with the Theravada Buddhist concept. They are as follows:

> 0~i[48] That the actual world is a process, and that the process is the becoming of actual entities. Thus, actual entities are creatures; they are also termed 'actual occasions.'
> i~ii That in the becoming of an actual entity, the *potential* unity of many entities in disjunctive diversity—actual and non-actual—acquires the *real* unity of the one actual entity; so that the actual entity is the real concrescence of many potentials….
> xxvi~xxvii In a process of concrescence, there is a succession of phases in which new prehensions arise by integration of prehensions in antecedent phases. In these integrations 'feelings' contribute their 'subjective forms' and their 'data' to the formation of novel integral prehensions; but 'negative prehensions' contribute

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[47] Whitehead, *Process and Reality*, 21.

[48] I use this numbering pattern to illustrate the processual series of creativity that entities are inseparable but related. Each entity necessarily takes part in the whole vice versa. Moreover, process concepts and entities are also connected each other like a web called organism of organisms nonlinearly. In comparison, I also intend, furtherly, the readers to get a conceptual sense of similarities between process philosophy/theology especially Whitehead's metaphysics with *Abhidhamma* Philosophy. The brackets are also taken out to have a sense of openness.

> only their 'subjective forms.' The process contributes till all prehensions are components in the one determinate integral satisfaction.[49]

Creativity, the Ultimate and Universal, also symbolically means "many and one" and vice versa; however, one needs to keep in mind that this "many and one" as creativity does not mean the mathematical number 1, but is the plain idea of singularity along with the bare idea of disjunctive diversity and multiplicity.[50] Unfortunately, when creativity is expressed in mathematical terms it becomes "the metaphysical generalization of mathematical concept of function: a metaphysical principle of generation and rule of following that contains the conditions for the possibility of its operations entirely within itself."[51] "Creativity is not an entity, however, and is real only through those *actual entities*."[52] Thus, creativity stands as a potential condition for the possibility of entities to come to be (or transformation) and functions as a transcendental ground.[53] Actually, it is an immanent transcendental as well as a transcendently immanent ground.

A good instance of creativity is the universe which is "One and Many," both universe and multiverse, with the idea of "multiplicity or *res Vera* and the solidarity of *res Vera*: entities are disjunctively 'many' in process of passage into conjunctive unity."[54] It is about differentiation and unification. Faber notes that Whitehead revises the bifurcation of reality—which is not differentiated from monism—then develops the notion of *ecological unity* through differentiation and the transition called *irreducible pluralistic differentiation* and the *dynamic rhythm of transition*. Reality, through creative transition, constitutes itself from multiplicity to unity as a

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[49] Whitehead, *Process and Reality*, 22-26.
[50] Whitehead, *Process and Reality*, 20-26.
[51] Philip Rose, *On Whitehead: Wadsworth Philosophers Series* (Belmont, CA: Wadsworth, Thomson Learning, Inc, 2002), 20.
[52] Livingston and Schüssler Fiorenza, *Modern Christian Thought*, 313.
[53] Rose, *On Whitehead*, 21.
[54] Dorothy M. Emmet, *Whitehead's Philosophy of Organism* (London: Macmillan, 1932), 72-73.

"moving whole." In other words, this new unity is *relativized into one unity among many.* In this *creative process,* or "category of the ultimate," there is a mutual transition of matter and mind, object and subject, reality and cognition.[55]

Faber explains that the "category of ultimate" has three characteristics named "relationality," "concrescence," and "creativity" with/in its transition. As relationality, nothing is isolated or separated. Every unity is composed of and, by relation, with/in other unities, and then constitutes multiplicity from which emerges a new and novel unity. This relationship is constituted by "inner essence" as a unity. As concrescence, the universe (or multiverse) shows, through relationship, its unity as "becoming concrete" in the process of "growing together" with/in plural unity as its integration. Moreover, the unity of reality is an experiential process and every emergence (or becoming) is an integrating physical reality with/in a mental unity. As creativity unity is synthesizing: on the one hand, unity becomes a creative novelty (in process) unity from multiplicity; on the other hand, the unity is relativized into one among many and creatively renewed by becoming and perishing with/in its unities or "moving whole." Thus, creativity functions as the activity of becoming and perishing.[56]

He continues by writing that Whitehead's cosmology as ecological unity leads to the notion of an "ecological doctrine of God." In ecological relationality, God is simultaneously "the principle of concretion" and stands as a "concrete event" with/in the process of processes through which everything is relationally constituted and creatively relativized. He remarks that "God now emerges as the happening that encompasses the universe in its ecological relationality and creative motion, as the empowering and saving event per se and in which the universe, as the

[55] Faber, *God as Poet of the World*, 23.
[56] Faber, *God as Poet of the World*, 24-25.

process of processes, creatively constitutes itself, ecologically enters into its network of relationships, and acquires enduring character even amid its perishing."[57] In distinguishing between God's primordial nature and consequent nature, and he identifies how

> every happening in the world is constituted ecologically into a new totality (mental reality) from relationship with other happenings (physical reality) and with new possibilities of its own realization. In this process of becoming concrete, God is that particular dipolar— "mental" and "physical"—event from which, on the one hand, every entity acquires, as its beginning, the possibility of new becoming (the idea as God's mental reality), *and* into which, on the other hand, every event happening that has become concrete is then taken up (the concrete world as God physical reality).[58]

Faber additionally identifies this process theological view as a "theopoetic concept of God" since, for Whitehead, the ecological doctrine of God is as the initiator, driving force, and catalyst.[59] Moreover, creativity itself is pure, formless, and uncharacterized according to Dorothy Emmet, unlike the entities or creatures which have different forms and characteristics. She also notes that creativity is exactly like Aristotelian Primary Matter, as well as the relation of Space and Time.[60]

By quoting Whitehead's words for creativity as a form of "passing on"—"in the dictionary sense of the *creare*, 'to bring forth, beget, produce'"[61]—Philip Rose points out that creativity is a synthetic or productive principle that is both immanent and pluralistic which is never reducible to its particular instantiations. He goes on to say that the principle of creativity gives the meaning of actual entities as "self-constructing or self-creating entities or occasions

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[57] Faber, *God as Poet of the World*, 25.
[58] Faber, *God as Poet of the World*, 25.
[59] Faber, *God as Poet of the World*, 25.
[60] Emmet, *Whitehead's Philosophy of Organism*, 73.
[61] Whitehead, *Process and Reality*, 213.

located within a general field of determinate and indeterminate relations or the objective character of subjective experience or creative, valuative, and dynamic world in concrete facts."[62]

Reto Luzius Fetz also, explains the notion of novelty. With the quality of transformation, that is novelty, the concept of creativity conveys the origination of novelty because each event is a process issuing in novelty. There is continual act of becoming. He points out that Whitehead also calls it "creative advance" for the wholeness of natural events, for the present comic happenings, and for becoming new actual entities in a higher level. When seeing the universe as a whole, it is a creative advance into novelty. According to creative advance, each actual entity is not an individual entity of simple production because each actual entity becomes a new entity by being constituted by other entities so that there are potentialities transcending them. In this sort of process, he introduces a special category of "conceptual reversion" which is coined as "novelty enter[ing] the world." In Whitehead's system, such creativity enables an internal relation between subject and superject intrinsically for actualization.[63] In other words, if an actual entity is a human being, they can get experience a divine life or a tragic life because of the internal relations and potentialities with/in creativity.

This concept of creativity describes the concept of genuine creation as a "relation with a newness of being" such that God could only be understood as the novelty of all existing being/s, which means God is with/in the events of becoming. In other words, it is the *immanently* transcending in creation—*immanently transcending*—novelty which is only relative. This relational concept of creation shows previous existent thing as a genuine and relative innovative

[62] Rose, *On Whitehead*, 21.

[63] Reto Luzius Fetz, "Creativity: A New Transcendental?" in *Whitehead's Metaphysics of Creativity* ed. Friedrich Rapp and Reiner Wiehl (Albany, NY: State University of New York Press, 1990), 195, 200-202.

process. Because of this, Whitehead's creativity is called a "principle of novelty."[64] Moreover, creativity is also conceivable as the panentheistic *Shekinah* with/in the dimensions of eco-feminist theologies, a feminine metaphor which symbolizes that the world exists in the womb of God "in whom we live and move and have our being" (Acts 17:28) from where life emerges.

Jan Van de Veken identifies the activity of creativity by quoting Whitehead's different texts:

1. Creativity is *active*
   It is termed 'substantial activity' or general activity;' it is the pure notion of the activity conditioned by the objective immortality of the actual world; it is that ultimate notion of the highest generality at the basis of actuality.
2. Creativity is something *real*
   [Creativity is] totally ordered to the actualization of new occasions. [It] is the ultimate subject to which the process of actualization is ascribed. Though not actual, creativity is as *real as actual occasions*. The efficient cause of the novel actual entity is Creativity conditioned by the actual entities of actual world.
3. Creativity has *explanatory* value
   Creativity explains also why there are new occasions: 'The creative advance is the application of this ultimate principle of creativity to each novel occasion which originates.'
4. Creativity is a *ground* or reason
   (It would be better to read this as 'mode' or instances of creativity.) In *Science and the Modern World*, God is not a real entity or *Seiendes*, rather the first qualification of being, or the firm and foremost limitation of substantial activity. All themes converge in the text of *Adventures of Ideas*, where creativity is explicitly termed 'reason:' the initial situation includes a factor of activity which is the reason for the origin of that occasion of experience. This factor of activity is what I have called 'Creativity'.[65]

Whitehead's

> "Creativity" is the universal of universals characterizing ultimate matter of fact. It is that ultimate principle by which the many, which are the universe disjunctively, become the one actual occasion, which is the universe conjunctively. It lies in the

[64] Fetz, "Creativity," 203.

[65] Jan Van de Veken, "Creativity as Universal Activity," *in Whitehead's Metaphysics of Creativity*, ed. Friedrich Rapp and Reiner Wiehl (Albany, NY: State University of New York Press, 1990), 183-185.

> nature of things that the many enter into complex unity. "Creativity" is the principle of novelty.[66]

From this perspective, even an actual occasion is a novel entity which is different from any other entity in the many entities within which it is unifies. The sense of togetherness presupposes the notion of creativity, or "many and one," such that any entity has its own identity within diverse and different identities. Mesle warns, however, that "creativity is not a mysterious power *behind* the world that makes it go. It is not fate, destiny, or a power that works for either good or evil. Creativity is simply the ultimate feature shared by all that is actual—God and the world alike."[67]

Whitehead also says about creativity that by synthesizing with many entities the "'many' become one, and are increased by one within the process of concrescence."[68] Hartshorne asserts the term creativity as creation by a philosophical category. In his philosophy of creative synthesis, he asserts that creation can be seen if it is identified by creative synthesis because of speculative philosophy which focuses on "to find[ing] the variables of which constants are special values."[69] He identifies reality as the process of synthesizing and explains that

> 'Synthesis' means 'putting together', a combining of factors into a whole. The obvious example of a synthesis is a single, momentary human experience, in which there is a diversity of data things experienced. Experience puts together its data; these remain several, but the experience in and by which they are put together in one. Synthesis is thus the solution of the problem of 'the one and many'. Each synthesis is a single reality, not reducible to interrelated parts. But it includes such parts. It is a 'whole of parts', yet it is more than that phrase clearly states: the safest language is to call it a synthesis, or an inclusive reality. The parts are the included realities. But the including reality is as much a unitary entity as is any one of the parts. Unity in this view is always a unification, an integration, and what is unified is always a many. Unity and plurality thus complement, and do not exclude, one another.[70]

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[66] Whitehead, *Process and Reality*, 21.

[67] Mesle, *Process Relational Philosophy*, 80.

[68] Whitehead, *Process and Reality*, 21.

[69] Charles Hartshorne, "The Philosophy of Creative Synthesis," *The Journal of Philosophy Vol. LV*, No.22 (October 23, 1958): 944-953 (Fortnightly, the Journal of Philosophy, Inc., 1958).

[70] Hartshorne, "*The Philosophy of Creative Synthesis*," 945.

Based on creative synthesis, Hartshorne states that process philosophical theology of creation is viewed through the concepts of "Being" and "Becoming" whereas traditional theological concept of creation makes "Being" higher. He affirms that "becoming" itself is reality while "being" only shows an aspect of this reality because "synthesis is an act, in some sense an event, an instance of becoming. Creation is always of the totality of reality, never of a part merely."[71] Becoming as creative synthesis means putting antecedent factors together in a new unitary reality. He clarifies by saying that "to put together is not to create what is put together, but it is to create the new inclusive togetherness or synthesis itself."[72] Moreover, Dorothy Emmet also posits that creativity is a "factor of activity" of the relation of both those prehending and those prehended as the meeting point and inter-action. In other words, it is in synthesizing and interrelatedness among diversities where unity arises.[73]

Hartshorne extends this, through the philosophy of creative synthesis, in his explanation about creativity as the social structure in process. He illustrates how the synthetic theory of reality is a social theory: when a society is being minimized in its meaning, it is a set of constituted entities which are interconnected with/in one another based on the degree of affinity or likeness and action or reaction; likewise, when reality is seen in a thoroughly social perspective, it is not "wholly other," because "everything is social" insofar as there is no collapse and contrast between social and nonsocial entities. Therefore, according to the philosophy of synthesis, the social structure is as ultimate as creativity. Still more, synthesis is always creative, involving of the word "social," with potentialities, so there is freedom. Action or reaction here is

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[71] Hartshorne, "*The Philosophy of Creative Synthesis*," 946.
[72] Hartshorne, "*The Philosophy of Creative Synthesis*," 946.
[73] Dorothy Emmet, "Creativity and the Passage of Nature," in *Whitehead's Metaphysics of Creativity*, ed. Friedrich Rapp and Reiner Wiehl (Albany, NY: State University of New York Press, 1990), 66.

organically relational for creative self-determination or freedom of choice to make a self-decision. As there are cause and effect, every cause becomes an effect, and every identifiable effect is of a prior cause. In a broad sense, a cause is a stimulus, and an effect is, in a similarly broad sense, a response in creativity.[74] Fetz points out that although Whitehead sees creativity as internal and extrinsic relation, "he explicitly treats creativity as an internal, but simultaneously—and more so—as an intrinsic relation: '*causa sui* (cause of itself), 'self-creating creature', 'immanent creativity', 'self-creativity', and 'self-realization.'"[75] Contrary to the traditional theological understanding of *creatio ex nihilo* as being univocal, as closed, and fixed with external relations, the process theological understanding of creation is meant *creatio continua* is creation into novelty.[76]

With the quality of divine dynamicity, I redefine creativity as, the interconnected and complex nexus with the meaningful idea of unity in diversity as well as diversity in unity from minutest experiences to micro-events. The conjunction *and* between the "Many and One" or "One and Many" is a meaningful idea of processual inter-relations. Due to the quality of active potentiality, value, and ground of reason, creativity is an actively living nexus or interrelated co-condition out of which non-living and living beings in the world are becoming. In this matter, a theistic community which holds a Christian concept of God in a pluralistic context (e.g., a Kachin Christian from a majority Theravada Buddhist country) points out, through process thought, that creativity is talking about the idea of creator and continuing creation as categories

[74] Hartshorne, "The Philosophy of Creative Synthesis," 948.
[75] Fetz, "Creativity," 195, 200.
[76] Fetz, "Creativity," 200-202.

of the ultimate and the categories of existence. In other words, it refers to the relationship of creator and creation as well as the relation of creation to creator vice versa: constituted relations.

C. Prehension

To know "how" creativity is meaningful and more, prehension is key. I will explore process scholars' interpretation of the concept the most important and original concept of Whitehead's entire metaphysical system. To be clear, prehension is related to a series of concepts: feeling, concrescence, eternal objects, actual entities, and nexus. These will be briefly discussed in this section. It should be noted that these concepts are to be read with a sense of connectedness because they are inseparably supportive of each other and to provide meanings to each other.

Each prehension is dipolar. As Whitehead describes it "every prehension has its public side and its private side. Its public side is constituted by complex datum prehended; and its private side is constituted by the subjective form through which a private quality is imposed on the public datum."[77] In a simple way, Cobb defines a prehension as being composed of an "objective datum" as well as a subjective form. The objective datum is *what* it prehends while the subjective form is *how* it prehends. Prehensions are the way that what is *here* becomes something *there*. This is, in other words, "causal efficacy" of the past occasion for the new one. Prehension is therefore the related bond betwixt and between two or many occasions because the new occasion draws or is shared in the experiences of the past occasion. Moreover, a prehension is an "internal relation" because it is internal to the prehending occasion while being external to the prehended occasion. Although the prehension does not change what it prehends, but the

[77] Whitehead, *Process and Reality*, 444.

becoming process changes because the prehending relation is asymmetrical. Indeed, no two occasions are consistently interrelated because the past occasion provides "causal efficacy" for the present one. This entails that a new entity, in the relation and continuity of prehension, emerges. Although the new occasion becomes from the past, the past occasion does not completely influence the new because the new occasion has its own choice and decision—or *superject*—in inter-relating with the others.[78] Indeed, prehension explains "causality" in the relational process of past experiences to becoming present in non-linearity. Prehension is therefore the way an actual entity or occasion is taking part in constituting another actual occasion.

In a further analysis, "every prehension consists of three factors: (a) the 'subject' which is prehending, namely, the actual entity in which that prehension is a concrete element; (b) the 'datum' which is prehended; (c) the 'subjective form' which is *how* that subject prehends that datum."[79] Interrelatedly constituted through it as a web together with the other processual concepts mentioned above, the reader needs to see the explanations and sense them in connections among each other so that they will understand the meaning and functions of prehension as a whole. According to Hartshorne and Creighton Peden's interpretation, prehension is a process. Through this process, an actual entity interacts with/in its environment for its becoming. An actual entity, an experience, is therefore analyzable into functionings which make up its process of becoming. There are two kinds of prehension: positive prehension and negative prehension. A positive prehension functions as the act of inclusion. Through the

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[78] John B. Cobb. Jr, *Whitehead Word Book: A Glossary with Alphabetical Index to Technical Terms in Process and Reality* (Claremont, CA: P&F Press, 2008), 31-32.

[79] Alfred North Whitehead, *A Key to Whitehead's Process and Reality*, ed. Donald W. Sherburne (Chicago, IL: The University of Chicago Press, 1966), 9.

functionings of positive prehension, an actual entity relatedly includes another entity as an object of its experience. Conversely, negative prehension functions via exclusion so that an actual entity is excluded as an object relating to the process of becoming of that entity.[80]

Negative prehensions are the paths by which actual occasions prehend eternal objects. They function in the role of rejection for the data being felt. However, not all past entities can be eliminated because there are also positive prehensions. Most actualized feelings in the past entities are eliminated from the objective data of occasions of human experience today. In quoting Whitehead, Cobb states that this elimination is negatively prehended because he believes that the entities which built up the whole of the past, as well as the eternal objects, are connected. Thus, this connected process is seen as a positive act of exclusion because this act also provides the subjective form of the new occasion or new life. Without the exclusion of negative prehensions, novelty is not possible.[81]

Prehension, which has a simple meaning of relation or inter-relation, is clarified as negative and positive relations. In this inter-relatedness of negative and positive relations, the negative relation is leading to the potentialities of elimination or perishing while positive relation enables to the potentialities of becoming. In the potentiality of their relatedness between them, new things occur and have the chance to be living.

1. Feeling

In a detailed and deeper study about prehension or relation, feeling needs to be described. Related to prehension is "feeling." Feeling is required with/in the process of becoming.

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[80] Charles Hartshorne and Creighton Peden, *Whitehead's View of Reality* (NY: The Pilgrim Press, 1981), 33.

[81] Cobb, *Whitehead Word Book:* 36-37.

Interconnected to feeling, prehensions are made and grounded for the becoming of an actual occasion. Similarly, as with prehension, A. H. Johnson quotes Whitehead in explaining that "feelings are 'vectors'; for they feel what is there and transform it into what is here."[82] Feelings are constituted complexly. In a wider analysis of prehension through feeling, there are five factors: " (a) the 'subject' which feels, (b) the 'initial data' which are to be felt, (c) the 'elimination' in virtue of negative prehensions, (d) the 'subjective form' which is *how* that subject feels that datum."[83] In accordance with Cobb's applying feeling to prehension, we can feel the occasions of our body and through them the external world. We can feel the past experience just as quantum occasions *feel* previous quanta. He quotes Whitehead, stating that every feeling of an occasion has a datum called an object or objective datum: however, this objective datum was a subject in its own right only moments ago. The objective datum is mainly composed of feelings. Thus, the world is largely constituted by the series and societies of feelings of feelings. He continues his interpretation by pointing out that the objective datum is what the feelings feel for any given datum. A feeling also has a subjective form which is how the datum is felt in the pure sense rather than rational sense. Subjective form is consciousness to a certain extent. The subjective form also has other modes, such as purposes, valuations, adversion, and aversion. An actual occasion is predominantly seen as a throb of emotion (or emotional being). He also notes Whitehead's assertive speculation in going over dualism of objective and subjective worlds to see them, through the lens of physics, as the vector transmission of energy. He points to Whitehead's affirmation and states that what we know subjectively as "emotion" needs to be measured objectively as "energy."[84]

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[82] A. H. Johnson, *Whitehead's Theory of Reality* (NY: Dover Publication, Inc, 1962), 28.
[83] Hartshorne and Peden, *Whitehead's View of Reality*, 33.
[84] Cobb, *Whitehead Word Book:* 34-35.

The lure of feeling is crucial because when the subject is acting out of prehension, the primordial nature of God is prehended. Moreover, the primordial nature of God as "the lure of feeling" conditions the process of an entity's becoming. Therefore, God is accounted for the beginning of the feeling process.[85] In explaining about feeling in relation to conceptual prehension, Cobb notes that "the relation of 'feeling' to 'prehension' is much like the relation of [an] actual occasion to [an] actual entity. There is one kind of actual entity that is not an actual occasion, namely, God."[86] Faber also affirms and explains that "Whitehead also differentiates actual occasions from actual entities insofar as all concrete actualities of becoming are actual entities, while God, since God is not a momentary drop of perishing experiences, is not an actual occasion."[87] "There is also one kind of prehension that is not a feeling. It is called a 'negative prehension',"[88] but positive prehensions are feelings.[89]

Further, prehension also has two aspects: physical prehension and conceptual prehension. "A prehension of a temporal actual entity is called a physical prehension. The eternal objects are pure, not actual potentials, and a prehension of an eternal object is called a conceptual prehension."[90] Likewise, because of having the physical pole and mental pole, there are physical feelings and conceptual feelings, or feelings of potentialities. Since Whitehead's thought is dipolar, physical feelings and conceptual feelings are complexly interconnected as a web. Cobb interprets conceptual prehensions or conceptual feelings as reverted feelings in a mean of relatedness such that

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[85] Hartshorne and Peden, *Whitehead's View of Reality*, 33.
[86] Cobb, *Whitehead Word Book*, 34-35
[87] Roland Faber, *The Becoming of God: Process Theology, Philosophy, and Multireligious Engagement* (Eugene, OR: Cascade Books, 2017), 19.
[88] Cobb, *Whitehead Word Book,* 34.
[89] Johnson, *Whitehead's Theory of Reality*, 17.
[90] Hartshorne and Peden, *Whitehead's View of Reality*, 33.

> conceptual feelings are prehensions of 'eternal objects.' These are 'pure potentials.' Many of these potentials are ingredient in what has been felt physically, but they become conceptual feelings only when they are distinguished from their actualization in what is physically felt and then felt in their distinct status as pure potentials. In this status they are valued as possibilities for actualization rather than as already ingredient in the past world. Accordingly, the subjective form of conceptual feelings is always valuation, so that conceptual feelings are also always 'conceptual valuations.' Whitehead sometimes writes of 'appetition'. Pure potentials are never entertained neutrally. They are abstracted form physical prehension for a reason.[91]

Related to this are physical feelings and conceptual valuations in all actual occasions. For instance, that there is continuity between one moment and another makes us realize the past experience happening only moments ago. However, the new experience is not completely the same as the previous ones. There is change so that some characteristics of the former experience are intensified and some are muted in the process of prehensions. When physical feeling of the past occasion prehends the subjective form of it, the occasion feels the eternal objects as pure potentials by bearing into effect in itself because they are also serving as ingredients in it. The datum in internal objects also turn up and down including in valuation, purpose, adversion, aversion, consciousness, etc. That there are changes and differences, in this relatedness of conceptual and physical feelings, introduces novelty.[92]

Physical feelings are, according to Johnson, varied terms: simple feelings (or simple physical feeling by Whitehead), transmuted feelings, and hybrid physical feelings. Simple physical feeling is the common form of physical prehension,[93] and it is also named causal feelings because they contribute the basis for new occasions. For instance, when one occasion feels the emotion of the previous occasion and appropriates it, there is an energy flow from one

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[91] Cobb, *Whitehead Word Book,* 37.
[92] Cobb, *Whitehead Word Book*, 37-38
[93] Johnson, *Whitehead's Theory of Reality*, 32.

to the next. This connected basis is called the causality of the world. In other words, occasions are taking part by being data of causal feelings and constituting other occasions for transformation into a new occasion.[94] It is remarked that simple physical feelings have the dual character of subjectivity and objective immortality—the productive character of nature and the cause as effect.[95] Further, as the world we live in is a socially-ordered world, transmuted feelings are also taken into account, which is different from simple physical feelings. Although Whitehead does not give any explanation about this, Cobb quotes Whitehead's clue:

> Whitehead describes the change from many simple physical feelings of microscopic entities to the experience of large objects as 'transmutation'. The same eternal object is abstracted from many individual occasions and is then applied to all of them. The 'society' composed of many occasions is then felt as one entity. Most philosophy takes the data of transmuted feelings as the clue to reality in general or, at least, to physical reality.[96]

Johnson explores how transmuted feelings arise when a nexus of actual entities provides the data because a nexus is composed of the societies of actual entities interconnected together by their objectification in each other. A complex process is fairly included in transmuted feeling. Through this complex composition, simple physical feelings are derived as conceptual feelings, and derived conceptual feelings are integrated with/in the simple physical feelings.[97]

Hybrid physical feelings or prehensions are also called pure physical feelings. They are the physical feelings of antecedent occasions which are causal feelings. Causal feelings carry energy from occasion to occasion. In a processual reversion of physical feelings and conceptual feelings, novelty is introduced, and the feeling is thus called a novel feeling, having occurred by hybrid prehensions/feelings. Cobb remarks that there is still a different physical feeling or

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[94] Cobb, *Whitehead Word Book*, 41-42.
[95] Whitehead, *A Key to Whitehead's Process and Reality*, 12.
[96] Cobb, *Whitehead Word Book*, 42.
[97] Johnson, *Whitehead's Theory of Reality*, 32.

antecedent occasion which only feels the conceptual feelings of an occasion, but not physical feelings.[98]

Feelings can be classified due to the relatedness of conceptual and physical relations. In other words, conceptual feelings and physical feelings can be seen as conceptual and physical interactive experiences—daily experiencing which even include the minutest conscious experiences. They are what, how, to which/whom, why, and when we do, think, and feel in relation to ourselves as well as the others both good and bad. They are interrelated subtleties. Even in their subtle conditions, they are also interactive potentials, in detailed, and are leading to either becoming or perishing.

2. Concrescence

Together with the physical and conceptual feelings related to prehensions, concrescence is important. To arise or perish, there needs to be related good and right condition. Hartshorne and Peden state that concrescence

> is the process of the becoming together into a unity of the different parts of the experience. In the process of feeling, the subject has developed an aim. When the aim of the actual entity occurs in a unity of experience, a concrescence has occurred. The term "satisfaction" refers to the fulfillment of the aim which has occurred in the concrescence. At this stage a new actual entity occurs. When an actual entity occurs, there is a new form of the world; it means that novel has come into the process.[99]

Cobb interprets concrescence as the process of becoming "concrete," which means "fully actual" as well as "a completed actual occasion." The idea behind why Whitehead uses the term "concrescence" is to emphasize the momentary flickers of actuality that actual occasions are processes. In these processes, there is an actual occasion in the process of becoming, and at the

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[98] Cobb, *Whitehead Word Book*, 42-43.
[99] Hartshorne and Peden, *Whitehead's View of Reality,* 34.

same time there is the completed occasion, the completion as satisfaction. In this way, this process of becoming is also characterized by subjectivity with a subjective aim, a subjective form, a decision including satisfaction which becomes objective datum for successor occasions.[100] Through this process of *concrescence*, "the world process is an interwoven society of societies, giving and receiving from one another, or a growing together of many entities and events into a complex unity."[101] This unity is of *concre*scence as *concre*te, similar to what was shown in creativity. While there is a certain similarity between them, concrescence focuses on the inner dynamics of individual subjective acts of becoming and creativity which draw attention to the ongoing interconnected process of the vast *and variety of manyness* through which the cosmos is continuously becoming.[102]

Furthermore, a pure physical prehension and a pure conceptual prehension must be synthesized in concrescence; so, they cannot exist separately in the dynamicity of time (Note: this is not "clock time.") Five phases are found in analyzing concrescence: (a) conformal feeling; (b) conceptual feeling; (c) simple comparative feeling; (d) complex comparative feeling; and (e) satisfaction.[103] These are also the stages of becoming. In quoting Whitehead, Cobb states that this process of becoming is called the genetic analysis of the becoming of an actual entity or occasion. He then shortens them into just three: the initial or conformal phase; the supplementary phase; and the phase of satisfaction. He calls this genetic analysis of concrescence a simpler way; however, these phases are connected and processive.[104]

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[100] Cobb, *Whitehead Word Book*, 60, 66.
[101] Livingston and Schüssler Fiorenza, *Modern Christian Thought*, 313.
[102] Cobb, *Whitehead Word Book*, 60, 66. Italics are mine.
[103] Whitehead, *A Key to Whitehead's Process and Reality*, 36-69.
[104] Cobb, Whitehead Word Book, 61

In this processual analysis of phases, the initial or conformal phase functions for the new occasion to reenact the past. In other words, the conformal phase is the stage of "causal efficacy" of other actual entities for the present concrescing entity. Both pure and hybrid feelings of physical feelings are dominantly participating as constructing factors to be the enduring ground of them in this phase.[105] A multiplicity of physical feelings are complexly constituted in this first stage. As simple physical feeling has a dual character, the cause of the vector can transform into an effect and vice versa. This stage is, the initial stage of potentiality which embodies novelty—the reproductive character of nature *and* the objective immortality of the past—in virtue of the integration of simple physical feelings. So, this initial or conformal phase of concrescence is the transforming stage from the objective contents to subjective feelings.[106]

Secondly, there is the supplementary phase of processual concrescence. Discussion of this stage should start with the conceptual feelings mentioned above. Indeed, this phase is the creative urge of two aspects constitutively originated by simple physical (or causal) feelings and conceptual feelings. These are derived from the physical pole and mental pole of an actual entity—a complex of mental operations and physical entities. In this process of the concrescing phase, the integration of physical and mental poles is constituted into a unity of the experience of self-formation. In other words, this phase is the originating process of the mental pole through the operation of conceptual feelings in the physical pole by taking integrations and re-integrations. For instance, some eternal objects are prehended positively, and others are prehended negatively. Some are felt and others are rejected. Note that "every eternal object has entered into the conceptual feelings of God"[107] through the constitutive operation of pure

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[105] Cobb, *Whitehead Word Book*, 61.
[106] Whitehead, *A Key to Whitehead's Process and Reality*, 40-41.
[107] Whitehead, *A Key to Whitehead's Process and Reality*, 48.

physical feelings and hybrid physical feelings.[108] Interestingly, it can be seen that hybrid feelings can be discerned into two sub-species: "(i) those which feel the conceptual feelings of temporal actual entities, and (ii) those which feel the conceptual feelings of God."[109]

Furthermore, in this process moment of integration and transformation for becoming a new entity, the concrescence enjoys its own experience. In quoting Whitehead, Cobb identifies that the term "enjoy" emphasizes the reality of the occasion itself, in itself, and for itself in a positive way without excluding pain and suffering. By pointing to this point, he affirms that there is "subjective immediacy" in the process of concrescence. Through this feeling or experiencing, "*consciousness* or conscious" subjective immediacy in mind is interestingly considered.[110] Moreover, consciousness arises through the potentiality of the "affirmation-negation" contrast of the subjective form of the feeling/prehension especially through propositional prehensions/feelings.[111]

> Thus, in experience, consciousness arises by reason of intellectual feelings, and in proportion to the variety and intensity of such feelings. This account agrees with the plain facts of our conscious experience. Consciousness flickers; and even at its brightest, there is a small focal region of clear illumination, and a large penumbral region of experience which tells of intense experience in dim apprehension. The simplicity of clear consciousness is no measure of the complexity of complete experience.[112]

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[108] Whitehead, *A Key to Whitehead's Process and Reality*, 49.

[109] Whitehead, *A Key to Whitehead's Process and Reality*, 49.

[110] Cobb, *Whitehead Word Book*, 62. Italics are mine.

[111] As there are pure and impure conceptual prehensions, an "impure prehension arises from the integration of a 'pure' conceptual prehension with a physical prehension originating in the physical pole. The datum of a pure conceptual prehension is an eternal object, the datum of an impure prehension is a proposition. A propositional feeling is a lure to creative emergence in the transcendent future. When it is functioning as a lure, the propositional feeling about the logical subjects of the proposition may in some subsequent phase promote decision involving intensification of some physical feeling of those subjects in the nexus. The propositions are lures for feelings, and give to feelings a definiteness of enjoyment and purpose which is absent in the blank evaluation of physical feeling into physical purpose" (Whitehead, *A Key to Whitehead's Process and Reality*, 66). Cobb also adds the scenario of the evolutionary process of a central nervous system: there are some stimuli which give rise to propositional and intellectual feelings (or complex comparative feelings), and these feelings involve the affirmation/negation contrast and includes consciousness in their subjective forms. Cobb, *Whitehead Word Book*, 63.

[112] Whitehead, *A Key to Whitehead's Process and Reality*, 67-68.

Consciousness, the arisen flickering event from complex comparative feelings (intellectual feelings) and propositional feelings, shows *how* we feel the affirmation-negation contrast. Consciousness is also named as the crown of experience.[113]

The third and final phase of concrescence is "satisfaction." Satisfaction is, indeed, a generic term which means "the one complex fully determinate feeling which is the completed phase in the process. It is fully determinate (i) as to its genesis, (ii) as to its objective character for the transcendent creativity, and (iii) as to its prehension—positive or negative—of every item in its universe."[114] Through this processual phase of concrescence, the manifold datum of the earlier is constituted into the unity of final satisfaction of feeling. In this process of the unified or synthesized subjective form of complexity or concrescence, an actual entity becomes its particular individual self. Satisfactions of entities are varied, including the gradation of intensity. Differences can only be known by analyzing the components in the concrescence from which the actual entity arises. Those components provide "values" to satisfaction. Satisfaction also enables to attain determination or the completing of the antecedent entity. The completion is called the perishing of immediacy. This phase of satisfaction is, in other words, also called the qualification of creativity which embodies self-creative as well as self-creating process. Thus, an actual entity is becoming through its ideal of its own individual satisfaction and transcendent creator.[115]

Moreover, a note about "objective immortality" is added to this satisfaction phase of concrescence. Hartshorne and Peden state objective immortality is a

> term [which] refers to the fact that after a temporal entity has reached its satisfaction, it perishes. In the state of perishing, the actual entity enters in the nature of God into a state of objective immortality, in the sense that in this state of "being" it becomes an object of possible prehension for the process of becoming

[113] Whitehead, *A Key to Whitehead's Process and Reality*, 68.
[114] Whitehead, *A Key to Whitehead's Process and Reality*, 70, 69.
[115] Whitehead, *A Key to Whitehead's Process and Reality*, 69.

> for other actual entities, including God. "It belongs to the nature of a 'being' that it is a potential for every 'becoming.' This is the principle of relativity."[116]

Cobb suggests that the alternative mood to the subjective immediacy of an occasion is its objective immortality. When satisfaction is attained, the occasion becomes a datum for other occasions and objective immortality begins to play a role in this process for their subjective self-constitution without any change. Objective immortality remains forever what it has become even in different roles in different successors and is interpreted differently because it itself is "objectively immortal."[117]

In summary, I, together with the scholars' enrichment, redefine that "concrescence" is an interconnected co-condition. It includes the constituted condition of both conceptual and physical feelings or prehensions including in the subtle, indivisible, and undefinable condition. No matter how much interrelated betwixt and between are, nothing comes out or perishes without having a well or right co-conditioned situation from various interrelated dimensions of living and non-living creatures. For instance, we cannot simply say that death is "stop breathing" because there are various interconnected co-conditions of lack of nutrition, destiny or causes of stop breathing, ageing, and so on. Thus, it is a co-interrelated conditioned situation for living or non-living things come out or cease true.

3. Eternal Object

The highest, lowest, broadest, deepest, and most meaningful degree via relation can bring mentally and physically is necessary to know. Process thought terms it as "eternal object." Interconnectedly "eternal object" is also discussed in this processual section of prehension.

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[116] Hartshorne and Peden, *Whitehead's View of Reality,* 34.
[117] Cobb, *Whitehead Word Book,* 64.

Hartshorne and Peden describe that "any entity whose conceptual recognition does not involve a necessary reference to any definite actual entities of the temporal world is called an 'eternal object."[118] Cobb puts an exact point of explanation about eternal object that "mathematical forms and formulae are eternal objects and that qualities of all kinds are eternal objects. E=mc squared [or $E=mc^2$], an eternal object. "[119] He goes on his interpretation that both natural and social science deal with eternal objects—a seven-dimensional space. Eternal objects are universal and pure potentials (like form or matter what Greeks thought) which are passively existing for subject and can be felt. But they cannot feel. They characterize something actual. In quoting to Whitehead that 'eternal' for eternal objects here means non-temporal, has no actuality, and they neither come into being nor pass away. At the same time, they *are* related to every temporal moment and become ingredients with/in and characterize actualities.

It should be noted that there are simple and complex eternal objects.[120] Typically, simple eternal objects are designated by words such as whiteness, hardness, sweetness, John and so on. They are singular in nature. A series (or societies) of eternal objects in a definite finite relatedness comprise a complex eternal object which is also called an abstract essence. When there is tremendous and successive degree of complexity, it is called abstractive hierarchy.[121] Elizabeth M. Kraus says that when

> the connexity of mathematical objects is translated into [a] metaphysics of forms, it yields valuable insights into [the] nature and relation of the abstract values or patterns in terms of which entities are structures. The forms structuring the togetherness of data into a datum of experience—eternal objects in Whitehead's

[118] Hartshorne and Peden, *Whitehead's View of Reality,* 33.
[119] Cobb, *Whitehead Word Book,* 23. I have changed the written sentence into the formula.
[120] Cobb, *Whitehead Word Book,* 24-26.
[121] Johnson, *Whitehead's Theory of Reality*, 19.

> language—are given for all times in ordered, intelligible, interrelated sets like mathematical systems.[122]

According to Kraus, eternal objects are abstract patterns and enable infusion for possibilities. In synthesizing, they move into the constitution of the process of realization by becoming ingredients in it. In other words, they, like an adverb, perform the role of *how* when a subject relates to an object in various forms. They are uniquely individual, however, inseparably interconnected with other eternal objects. They also have their respective identities and definite status. Because of having relational qualities termed *qualia*, an eternal object serves, through its togetherness, as a lure for the process of realization. In other words, as prehension is a feeling of the *feeling* of another; in this relational case it can be implied that eternal objects act as energy flow from one occasion to another in a way of process. Kraus says that "in the simplest case, this is a description of energy transfer from occasion to occasion in a route; in the most complex case, it describes the personal identity reiterated in a life history."[123] In causality, eternal objects act like force. She also interprets causality "as a transfer of energy from past to present. But energy is always a *kind* of energy, always structured, always displaying a form. An emergent occasion feels into itself…. The eternal objects may represent the energy structure received from the past…[c]onstitutes the energy *qua* energy."[124] Moreover, Whitehead "distinguishes between enduring objects that pass away and eternal objects or (pure potentials) that are abstracted from the concrete object."[125]

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[122] Elizabeth M. Kraus, *The Metaphysics of Experience: A Companion to Whitehead's Process and Reality*, Second Edition, (NY: Fordham University Press, 1996), 29.

[123] Kraus, *The Metaphysics of Experience,* 30-31.

[124] Kraus, *The Metaphysics of Experience*, 31.

[125] Livingston and Schüssler Fiorenza, *Modern Christian Thought*, 314.

Furthermore, the unitary quality as the essence of eternal objects is internal and organic relatedness with personal and private nature in *quasi*-independence. If an actual occasion is apart from its world, due to this essence, then it is meaningless. Johnson cites Whitehead and distinguishes *relational essence* from *individual essence* because every eternal object has its unique difference. For instance, good is not bad, John is not Mary, and so on.[126] Kraus points out that the different manner of the relational essence of an eternal object can be described by the following facts:

> (a) the indefinite plurality of relations which constitute the status of the eternal object in the realm of possibility, for every possible relationship of an eternal object is itself an eternal object entering into relationship with all other eternal objects….ad infinitum;
> (b) the generalized relation of an eternal object to actuality; and
> (c) the limitation placed on i) by the spatio-temporal conditions exemplified in the actual course of events, which conditions themselves are eternal objects.[127]

She continues by saying that when these are combined, there is the possibility of finite truth, the constitution of the nature of manifold internal relations of eternal objects, and the fullness of eternal objects.[128]

In a summary of this section, I, together with the knowledge of the scholars, interpret "eternal object" as "love" which can be felt and express in various characteristics of hardness, sweetness, softness, and so on. However, it cannot feel, but is existing universally and forever. Natural Science shows it by the symbol of mathematical equation $E=mc^2$. Indeed, love is pure potential to which living creatures can relates and express in degrees and ratio. Eternal object can be seen as God as "love energy"—relational, which is symbolized as love.

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[126] Johnson, *Whitehead's Theory of Reality*, 20.
[127] Kraus, The Metaphysics of Experience, 33.
[128] Kraus, *The Metaphysics of Experience*, 33.

4. Actual Entity or Actual Occasion

To know, see, feel, and touch the eternal object, actual entity is relatedly necessary. Actual entities are also named actual occasions. Hartshorne and Peden state that "if the first type or primary entity is a temporal actual entity, the second is an eternal object."[129] Conversely, if an eternal object is the first type or primary entity, the second is an actual entity or occasion. Due to the constitutively interconnected togetherness of eternal objects,

> [an actual entity] represents the final, real thing of which the world or universe is made. An actual entity is a "drop of experience" which itself constitutes its internal right-to-be. On the basis that actual entities are the only real things, the ontological principle is asserted. On the basis of this principle, all things are positively somewhere in actuality and relatively potential everywhere for the process of another actual entity.[130]

Actual entities are complex and interdependent. In the process, "they appropriate or prehend the past, realize their own peculiar, subjective form or aim, and eventually perish and become an objective datum for some other entity"[131] because they are the potentials for the open future. However, they have their own identities and structures so that they make the world organically.

According to Cobb, Whitehead chooses "actual" for the mode of existence because to exist means to have reality of any kind of whatever. In contrast to the dichotomous material and mental substances of Descartes, he affirms that the actual entities that make up the world are actual occasion happening in "events." This is distinct from traditional Western thinking regarding "events"; thoroughly, events can be seen as moments of matter in motion. As there are relations, entities are composed of complex quantum events. In accordance with event thinking, "atomic" events are actual occasions or occasions of experience. For instance, a momentary

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[129] Hartshorne and Peden, *Whitehead's View of Reality,* 33.
[130] Hartshorne and Peden, *Whitehead's View of Reality,* 32.
[131] Livingston and Schüssler Fiorenza, *Modern Christian Thought*, 314.

human experience is an occasion, but an occasion of human experience is not meant as a person experiencing. Indeed, complex events can be analyzed into smaller events. Consider the event of a war. The experience of every participant can be analyzed into a temporal sequence of occasions of experience, then into its parts, in various ways and so on. However, regarding the occasion of experience, quanta are not meant to be conscious because experience needs sensory experience based on organs of sensation. Thus, thought and experience is necessary, via a brain and its related parts. 'Experience' helps to understand something being acted on and acting. Cause, through internal relations, is meaningful because of experience. Apart from experience, there is nothing.[132]

In a further discussion of actual occasions, he quotes Whitehead's thought and states that quantum events are actual occasions because everything which is actual is composed of them. Together with the notion of physics and chemistry, which reveals the relations of observed and observer, Whitehead views subatomic events (e.g. electrons and protons) as occasions by taking account of quantum energy because quanta are among the smallest and indivisible units. In other words, the causality of an atom should be conceived that it is a composed and integrated society of quanta. They are with differences as well as in common. They are not "matter" (in Greek and modern sense) or passive recipients but actively constitutive themselves as what they become. They are energy-events. Like the moment of human experience which is connected to characters, the content of antecedent human experiences and neural events in the brain, quanta function largely in the quantum field in which they belong. However, the dynamicity of "the principle of uncertainty" is to be embraced. Moreover, it is noted that Whitehead's occasions in 'empty space' should be taken as quanta of energy. Due to the notion of "hybrid feeling," he believes

[132] Cobb, *Whitehead Word Book*, 16-17, 21, 23,

that there are cellular occasions which are also societies composed of actual occasion (or quantum events) and which are indivisible.[133]

In the discussion of occasional experience, Kraus also illustrates an actual occasion as a space-time quantum. She identifies that space and time are relative in systems, and there is also a continuous change to create new experiences of matter through quantum events. All that perish are, in a new synthesizing, to be reborn—it is transforming into something new without truly dying at all. In observing the prehensive unity of any actual entity, the temporal sequence occurs because of the indivisibility of the smallest quantum. Thus, any life history is, viewed through the lens of the doctrine of prehension, composed of discrete, spatio-temporal drops, episodes, or occasions of experience. This unifying process unfolds the manifold and multiplicity of aspects of the world or organic characters. Nature is, therefore, seen as a complex prehensive unification.[134]

Cobb continues Whitehead's belief that conscious experience is an evolutionary product. For instance, beings with conscious experience have emerged from beings whose experience is unconscious. Indeed, evolution also needs the basic continuities underlying the discontinuities. Animal experience can only emerge out of the organically interconnected complex of neurons, organically not materialistically or mechanically. Thus, what Whitehead calls the "soul" (from the Greek *psyche*) appears together with the central nervous system; however, it relates to experience. Thus, later, Whiteheadians have proposed using 'panexperientialism' or 'pansubjectivism' instead of panpsychism because to be actual, according to Whitehead, is to be experiential and to have subjectivity.[135]

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[133] Cobb, *Whitehead Word Book,* 19-20.
[134] Kraus, *The Metaphysics of Experience*, 19-24, 26.
[135] Cobb, *Whitehead Word Book*, 21-22.

Speaking of an actual entity is a way to refer Whitehead's system.[136] In speaking systemically, "the philosophy of organism is a cell-theory of actuality" because an entity is actual by arising out of the interconnected systems of series and societies.[137] Johnson quotes Whitehead and notes that actual entities or occasions which are infinite in number are also referring to the ordinary entities called "subjects" or "selves." They are, accurately, the momentary experience (s) of a *subject* or *self*. So, both "subject" and "actual entity" are synonymous. Moreover, there is also a superject nature. The process through which an actual entity acts (re)-acts to its environment is called *prehension* which has a varied and related dimension as mentioned before.[138]

There is one crucial and interesting matter to be kept in mind: the concept of "God" is conceptualized as an actual entity but not an actual occasion. Although there is an enormous contrast to the ever-perishing occasions through which the temporal world is constitutively composed, God is to be seen as an interconnected series *and* societies of actual occasions. Cobb thus points out that Whitehead's God is the related group or systems of actual entities composed of God and the occasions that make up the world.[139]

In a concluding remark of this section, actual entity or actual occasion can be seen as living and non-living creatures. They are, indeed, complexly constituted relations of eternal objects. Among living and non-living creatures, human beings can be used as the best example of actual entity or actual occasion because they are also the center of relational dimensions of creation. The "center" here means human beings is, through relations, the highest and broadest

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[136] Cobb, *Whitehead Word Book,* 16.
[137] Whitehead, *A Key to Whitehead's Process and Reality*, 8.
[138] Johnson, *Whitehead's Theory of Reality*, 17.
[139] Cobb, *Whitehead Word Book,* 17.

degree of having wisdom or freedom of choice to make decision than the other creatures. They can be either divine or miserable ones in the relational and transformational process of creation due to the interrelation power of mind and body; and the others. Christian conceptualizing God as human beings is also due to the relational quality of love. God is, in other words, symbolized as "love energy" which is eternally existing. In whom the love energy or the eternal truth, human beings can, in relation, know, feel, see, and touch. Thus, human beings can also be seen as the complexly and interrelatedly composed mass of energy. While human beings are temporal, God is eternal.

5. Nexus

To experience creativity, "nexus" is necessary to know because they are the best and clearest example of the constituted organism of relations. When exploring Whitehead's categories of existence, there are subjective forms and nexus to be known. Subjective forms are private matters of fact, through which occasions feel the past, while a nexus is a public matter of fact(s).[140]

A nexus is comprised of multiple occasions or is a society of actual entities or occasions. For instance, a tree is a nexus of molecular occasions (which are themselves societies of quantum events). Even the air in a room, the atmosphere of the whole planet, and any empty space are nexus constitutively composed of occasions. It should be noted that neither a single occasion nor a set of otherwise identical occasions is a nexus. A nexus is a plurality of occasions which are, through internal relations, bound together. A nexus functions in two ways, objectively and formally. Objectively, they exist for any observer, like a cake and a cup exist for a human being.

[140] Cobb, *Whitehead Word Book,* 27.

Formally, they exist as processes by appropriating the past and constituting themselves. So, a nexus is also termed a "formal constitution."[141]

Further, "a nexus is a 'systematic scheme of relatedness'; nexus provide the 'prevalent order' that enables the actual world to be 'felt as a community' via transmutation…the special sorts of nexus called societies…"[142] As societies are mostly considered to be nexus (viz. the plural form of "nexus"), there are social order. However, there are also nonsocial nexūs with no social order. For example, there is no social order in empty space even though something is going there—there—there is energy in the vacuum—there is nothing that moves and nothing that can be measured. Due to the internal relations of it, empty space is space that is empty of societies of events or energy. There is something shared-in-common with/in the members of societies, unlike the members of a set or a class. Societies share characteristics through feelings, endure through time, and can change location. A human being might belong to a variety of societies. In the means of relatedness, the term society goes beyond human societies because it is also found with/in nonhuman organisms, inanimate objects, or any nexus of events. In the variety of societies, three types of societies are distinguished:

1. experiencing in one member at a time, like human individual, is called a "personally ordered society";[143]
2. for the occasion of protons and electrons, more specialized form of social order incorporates electrons and protons into atoms, atoms into molecules, molecules into living cells, and cells into vegetable and animal bodies. Atoms, molecules, cells, and

[141] Cobb, *Whitehead Word Book,* 27-28.
[142] Whitehead, *A Key to Whitehead's Process and Reality*, 77.
[143] Cobb, *Whitehead Word Book*, 27-29.

bodies are complex societies and hierarchies of societies within societies. Such series of complex societies are termed "structured societies"; and

3. when personal order constitutes a society that endures through time, it is called an enduring object. When enduring objects are in the condition of physically larger objects like rocks, gases, and liquids, they are called "corpuscular societies."[144]

As a summary of this section, living and non-living creatures are constituents or nexus of all three kinds of societies. Among them, human beings are the most complex interconnected organism of series and societies. Moreover, the world or continuing creation is composed complex constituents not only by the private and primary creatures but also the secondary and tertiary series and systemic organisms. For instance, the complexly composed of interconnected systems and structures of politics, economics, education, race, religion, and so on. Moreover, it also includes the systems and structures of extraterrestrial worlds and other human-made systems and structures of both mental and physical creativities.

D. God-World Relationship

From the outset it has been maintained that the process God is completely different from classical Christian God. To have a greater sense of this difference, it is necessary to review a short description of classical Christian theological concept of God.

Whitehead highlights that "the notion of God as the 'unmoved mover' is derived from Aristotle, at least so far as Western thought is concerned…When the Western world accepted Christianity, Caesar conquered; and the received text of Western theology was edited by his lawyers."[145] In the last two thousand years, Christian theology was constructed by taking varied

[144] Cobb, *Whitehead Word Book,* 29-30.
[145] Whitehead*, Process and Reality*, 342.

resources from Egyptian, Persian, Hebrew, and Roman thought; all of this was then fashioned God into the concept of God as being like the as imperial rulers. Such a classical image of the Christian God has been accepted by most of the Christian community until today. Based on this traditional view, God is almighty *qua* an omnipotent entity who holds absolute power, created all the universe, exerts control over all, and manages everything. Nothing is outside this God's power. He (since such a God is frequently portrayed in masculine terms) is omniscient knowing all things which he created, even the future. Such knowledge is infallible. This God is also eternal and stands outside of time and the world. He is unchangeable and perfect forever.[146]

Again, the process view is in contrast to traditional theology. Finding the place of God in Whitehead's metaphysics is interesting and crucial because it also gives the reader a sense and notion of the relationship of God and the World. Faber points out eight points of departure between process and the tradition: the future; potentiality; order; subjectivity; intensity; person; value; and unity. The future is essentially novel insofar as there are new possibilities. He states that "God appears as the locus of the future insofar as the future has its place *within* God."[147] It shows that both novelty and the future are the essence of God's event with/in their primordial nature. Moreover, it is the simultaneously unconditional grounds of the process of absolute future constitutes its "beginning." In this condition, Godself is also seen as the future of the world or becoming possibility for emerging the world in the sense of organic connection. The spirally connected series of time—past, present, and future—reveals the ground of possibility as well as potentiality. The energy of the past as a sort of causal pressure enables the present to decide with/in the variety of possibilities.[148] Unlike traditional theology, the future is not static

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[146] Mesle, *Process Theology,* 3.
[147] Faber, *God as Poet of the World*, 84.
[148] Faber, *God as Poet of the World*, 85.

but living with/in a full range of possibilities. This means that even God cannot know the future due to the potentialities and possibilities come out of the interconnections of God and the World. As Faber points out,

> It is in that space that the factual is gathered as that which is received (felt), that is, as "real potentiality" *for* the becoming of an event, and the possible as that which is as yet *un*realized, that is, as "pure potentiality" *for* the decision that will in fact realize an event. That is to say, it is within a becoming event itself that both past and future come together as the potential for realization; as such it is the presence *of* both past and future.[149]

Even as God's primordial nature is infinite, the subjective character of God's timelessness cannot be objectified. In this subjective timelessness of God there is a creative locus of eternal objects. That there is a subjective and creative constitution in the eternity of God makes known the unconditional vitality of God in the infinite unity of presence/present. Based on the organic thinking of Whitehead, order in creative process can be highlighted in the relationship of chaos and cosmos amid perishing and becoming. Faber identifies the potentiality which enables order: "*Within* events they articulate "qualities," *between* events they refer to "characters" *between* event *nexuses* they form "patterns," and *within the whole* they define '(natural) law'. God is, [thus] the event locus of all *possible* orders of the world."[150]

Relatedly, subjectivity, is both becoming and perishing as a result of the process of prehension. The subjective aim also fashions the subject and superject with/in growing togetherness or concrescence. In quoting Whitehead, Faber points out that there is an initial aim for any event (which refers to the beginning or becoming). It is God's given initial aim which guides or lures the process of continuing creation. Moreover, there is also self-enjoyment because of the functions of subjective aim. He quotes Whitehead and says that the primordial

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[149] Faber, *God as Poet of the World*, 86.
[150] Faber, *God as Poet of the World*, 89, 92.

nature of God is to be seen as the *absolute standard of intensity*. Through seeing a nexus as a personal society, he discusses how a person is an ecological organism with/in internal and external networks. A person is a living nexus interconnected with complex and multiple societies or organisms with originality and identity. A conscious event, or the consciousness of a person, is required for the highest structural intensity of integration (in a hierarchy) so that a purely living nexus, without having characters, is developed.[151] As there is "an interaction between the earthly person and the person in God. God not only transforms every personal event into a divine reality"[152]; what is more "God also lets this transformed reality flow back into the earthy process as part of the mutually communicative immanence between God and the World."[153]

So, a person is crowned with value, and the self-value and the self-transcendence which follow are ethical in nature as relational claims. Unity is also present, and it has both processual and relational elements. It is the unity of becoming and perishing—the unity of becoming one internally and becoming one between and among others. In this processual unity, there is difference as well as *connex*ion as relational unity or *nexic* unity which is a creative process that constitutes a field—a field of mutual immanence, which enables creative self-transcendence in keeping its wholeness open into Harmony of Harmonies. In other words, it is an open, living, and harmonious wholeness.[154] According to an event-oriented ground of creativity and its relational unity, this unity is a field of force. This processual unity is, through its relational qualities, divine

[151] Faber, *God as Poet of the World*, 94-106
[152] Faber, *God as Poet of the World*, 107.
[153] Faber, *God as Poet of the World*, 107.
[154] Faber, *God as Poet of the World*, 113-119.

and dynamic which expresses the essence of trinitarian *perichoresis*[155] which can be defined the trinitarian relational God of Love in Christian theology. According to Athanasius's theology, there is mutual indwelling as *perichoretic* union or economic (oikonomia) Trinity in his well-known formula as organic system and structure: "*from* the Mother, *through* the Son, *and in* the Holy Spirit, or *to* the Father, *through* (and with) the Son, and *in* the Spirit."[156]

Interacting with this process relational unity-in-diversity, Hartshorne and Peden assert together a Christian faith in the Trinity, arguing that display the two-natures Whitehead's God can be found in three natures of the Trinity:

> God is an actual entity which is non-temporal. This means that God does not perish and become objectively immortal as temporal actual entities. God's nature can be discussed in three ways. The first is the Primordial Nature of God. In this nature God sustains all eternal objects. In other words, God contains in the eternal objects all the potential "subjective aims" for temporal actual entities. Through this nature God supplies each becoming experience with eternal object-subjective aim. The second is the Consequent Nature of God. This 'consequent nature' of God is the physical prehension by God of the actualities of the evolving universe. In this way God saves the perishing actual entities in his own nature. The third is the Superjective Nature of God. The 'superjective' nature of God is the character of the pragmatic value of his specific satisfaction qualifying the transcendent creativity in the various temporal instances. This is the manner in which God works to bring about good or harmony in the universe instead of evil or destruction. This trinitarian view of God must not be taken to mean that God is three, instead of one concrete actual entity. These three natures of God must be taken into account at all times, or the nature of God is being considered in abstraction.[157]

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[155] In contrast to the Top-Down figure of the Trinity which focuses on the Godhead at top and the Son and Holy Spirit at the bottom, this theological view focuses on relations between and among the Persons. *Perichoresis* is derived from the Greek word *chora*, which is interpreted as the relationship of the three persons—Mother, Son, and Holy Spirit— in the Christian Trinitarian God as they relatedly and immanently belong 'in-each-otherness' in a *perichoretic* way of mutual indwelling in actuality. Together with divinity and co-equality in unity and diversity, there is distinctiveness despite creative activity is multiplicity and complexity. It deepens, according to Cappadocian fathers, the *homnoousial* interrelation of holistic thinking of the Trinity that the '"whole" of the Godhead' is in each part and each part is also in the whole. No part and whole are separated. McGrath, *Historical Theology*, 62.

[156] Thomas F. Torrance, *Divine Meaning: Studies in Patristic Hermeneutics* (Edinburgh: T&T Clark, 1995), 314; quoted in Bwa, "Thomas Forsyth Torrance," 67-68, 229.

[157] Hartshorne and Peden, *Whitehead's View of Reality,* 34.

Indeed, why the God-World relation matters is about the dipolar God: what and how the primordial and consequent natures of God are with/in each-other. Indeed, the notion of dipolarity is crucial for the relationship of God and the World. In the primordial nature, God is the chief exemplification of metaphysical principles and the unlimited conceptualization of the absolute ground of potentiality. Their feelings are conceptual feelings as unconditional actuality as pure potentials. However, there is an order relevant with eternal objects to the process of creation. They have the character of a free creative act. God is not *before* creation, but *with/in* all creation. Through his/her lure of feelings, God gives a desire for creative acts to the world by establishing initial phase of each subjective aim. By considering the primary action of God on the World, they are the principle of concretion.[158] Thus "God, as well as being primordial, is also consequent. He is the beginning and the end. He [sic] is not the beginning in the sense of being in the past of all members."[159] Organically speaking, God sets their own mutual limitation or self-limitation as their holiness and faithfulness for the sake of their creatures' freedom and decision. According to process *panentheism*, the world thus becomes divine—the divinely systemic organism with/in God.

There is, through the consequent nature of God, a reaction of the World on God because they derive the fullness of physical feelings from the objectification of the world in him for the completion of his nature. In other words, God shares with/in every new creation its actual world. So analogically speaking to their dipolar nature, God's primordial nature is constituted by conceptual experience. This side is infinite, free, complete, primordial, eternal, actually deficient, unconscious, and devoid of all negative prehensions. But God's consequent nature originates

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[158] Whitehead, *A Key to Whitehead's Process and Reality*, 79-80.
[159] Whitehead, *Process and Reality*, 345.

with physical experience. This side is finite, incomplete, consequent, "everlasting," fully actual, and conscious. It regards with temporality and acquires integration. Moreover, conceptual experience can be infinite, but it belongs to the nature of physical experience that are finite. It is conceived that an actual entity in the temporal world, on one hand, which arises by physical experiences with its process of completion motivated by consequent, conceptual experience initially derived from God. And God, on the other hand, is also originated by conceptual experience with their process of completion motivated by consequent, physical experience, initially derived from the temporal world.[160] God and the World are interdependent for their respective completions by sharing with/in each other. There is no separation between them.

It is conceivable that without the World, God is meaningless; and without God, the World could not exist. Indeed, the World reveals what and how God is, and God shows us what and how they are through the World. Moreover, the reader needs the World to see God because the World as the organism of God or "the Body of God"[161] displays *how and what* they are—a personified Sophia implying Wisdom and Knowledge. To know the World, the reader needs God *qua* the Wisdom and Knowledge of *how and what* they unveil. Further, it is like what is found in the Hebrew Bible and the Christian New Testament: "The heavens are declaring the glory of God, and their expanse shows the work of his[sic] hands… how majestic is your name in all the earth…the creation of the world God's invisible qualities, His eternal power and divine nature, have been clearly seen, being understood from His workmanship…" (Psalm 19:1, Roman 1:20). In other words, it is implied that one who, according to the notion of the dipolarity of God,

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[160] Whitehead, *Process and Reality*, 345.

[161] Sallie McFague constructs her ecofeminist theology based on Natural Science. In her organic thinking, she theologizes the world as the Body of God in our scientific age. McFague, *The Body of God,* 32-62.

attains Wisdom also knows about God and the World at the same time. Whitehead puts a group of antitheses regarding the relationship between God and the World as follows:

> It is as true to say that God is permanent and the World fluent, as that the World is permanent and God is fluent. It is as true to say that God is one and the World many, as that the World is one and God many. It is as true to say that, in comparison with the World, God is actual eminently, as that, in comparison with God, the World is actual eminently.
>
> It is as true to say that the World is immanent in God, as that God is immanent in the World. It is as true to say that God transcends the World, as that the World transcends God.
>
> It is as true to say that God creates the World, as that the World creates God.[162]

However, God and the World are contrasted in terms of the supremacy of creativity which has the quality of concrescent unity and transformation, multiplicity and diversities.

Process thought, thus, describes the relational qualities of God being fully involved with/in and through the world, as well as being affected by the World through co-creation and co-suffering. In the infinitely complex experiential nexus of the consequent nature of God, actual entities constitute the actual world. Indeed, Whitehead conceives that God *saves*.[163] God interdependently shares and is shared in the experiences or feelings of actual entities in their suffering as well as their joy. God is the ground of all infinite mentality while the World is the multiplicity of finite. Neither is fixed or static. As potential form, God is the primordial unity which needs the consequent multiplicity of the World while the World is a primordial multiplicity which needs consequent unity for novelty.[164]

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[162] Whitehead, *Process and Reality*, 348.

[163] Whitehead, *Process and Reality*, 346. This word comes from the Latin word *salvus,* which means "to heal" (the wound, body, soul or mind). Thus, the derived word "salvation" is rooted in the meaning of healing, wholeness, and well-being. It concerns much about a sense of wholeness, (re)connection, and liberation as well as creation—personal and communal—for our life here and now. White Bear Unitarian Universalist Church, "Salvation," accessed July 31, 2020, https://whitebearunitarian.org/salvation-the-practice-of-healing/.

[164] Whitehead, *Process and Reality*, 348-351.

Together with the scholars' interpretations of God-World relations, I describe an interpretation in this section. Primordially, God the eternal object potentiality is immanently transcending vice versa in us the World consequently. In this way, the world is becoming full of wisdom, wonders, and beauties as the image of God. Moreover, the world is also relatedly crowned the full authority of God. Panentheistically, God shows the quality of humbleness as inner potentials in the world, which is the relatedly authoritative wisdom. Indeed, the quality humbleness what process shows is the power of courage to be and do between God and the world; and between each other. It, in the other words, enables to share and be shared as shown in the symbol of equation $E=mc^2$. This relational equation symbolizes equal relations between differences.

E. Summary and Evaluation

In this final section, I will describe the significance of a conclusion from this chapter. I reinterpret the process concepts of scholars' interpretation mentioned above to have an easy understanding in daily experiences. Coping with ecological orientation and creativity in process philosophical theology is a philosophical truth of novelty, which potentializes newness or freshness. It is a potentiality like a womb full of possibilities. It is ultimate—it is universal of universals. Creativity, as a ground or reason, is real and active, which is full of explanatory values and identities via interconnectedness. Therefore, many different and new things are arising from it and are living, moving, and having their identities with/in it. It is an interconnected complex nexus as a web of one and many. In other words, it is a related web of whole and parts. So, there is no whole without parts and the parts are also meaningless without having the whole.

The key matter betwixt, between, and beyond them is "relation" or "inter-relation" also called prehension, with the role and function of dipolarity. Indeed, they are two interconnected mental and physical poles. Indeed, creativity enables the actualization of the world; and the actual world is in process. In other words, it is an interconnectedly on-going phenomenon of non-actual and actual worlds, which will go on forever. Therefore, creativity is a concept of continuing creation which goes and will go openly and endlessly because it is a processually interconnected co-condition out of which non-living and living creatures come to be. An entity, with/in creativity, is actualized when a situation is co-relatedly conditioned by the potentialities of possibilities called concrescence. It is like a simile of guitar. There is no sound in a guitar but only a potentially possible co-condition of guitar box and strings. When the top of a finger touches on a string of it, a sound of melodies is produced.[165] Thus a sound is a becoming phenomenon. However, no two actual entities are the same in this process while eternal objects are undifferentiated. (It should be noted that actual entities, in creativity, are termed for creatures—both animate and inanimate beings.) To continue this discussion, I choose "human person" as the best example for an actual entity or actual occasion to have a clearer interpreted explanation.

Similar to the simile, a human person, an interconnected complex nexus or actual entity, is becoming out of a co-relatedly potential condition of possibilities of both non-actual and actual worlds. The condition is constituted by various dimensions of entities from the past and the

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[165] I owe Bathanda Nandamalarbhiwunsa for explaining when things are arising through *paticcasamuppada*. I have translated from Burmese and use this as an example for creativity because it is easy to understand for those who are more accustomed to music in Church and worship. Bathanda Nandamalarbhiwunsa, "*Abhidhamma: Myetdhedhana*" (in Burmese) which means *Abhidhamma*: Divine and Dynamic," (in English) August 18, 2008 Kanmyit Kyawngtaik Dhamma Center, Sanchaung Township, Dhamma preaching file No. 6 in Burmese, MP3 56:13, Yangon: Parapaid Dhamma Distribution.

present in complexities and with multiplicities (and vice versa). The processual condition goes in non-linearity. In other words, a human person is composed of the complex entities of mind and body in interrelatedness—through prehensions as well as feelings. Actually, a human person is not a substance but an interconnectedly constituted event or occasion of becoming and ceasing in the changing process of creativity. That there are negative and positive prehensions or relations makes the future with full of possibilities. However, human person has their own decision to make opportunities for self-determination within negative and positive relations with/in their self and with/in other entities. These negative and positive relations or interactions are both mentally and physically. A human person can ultimately become either divine or miserable (evil) interdepending on their self-formation of relations. (God is also a becoming actual entity, but not a momentary drop of perishing in his/her constitutively concrescence of experiences.) God, as an actual entity, is eternal and primordial; and God can be conceived as a personification or as love as personal and relational in a human person their consequent nature.

Connectedly, a human person is, furthermore, constituted by mental and physical relations with/in their self and others. The matter of eternal objects is taken as crucial for these two related poles—mental (conceptual) and physical poles. Eternal object(s), shown as an example in mathematical form $E=mc^2$, are *qualia* or form in Greek. They are basic, universal, eternal, and pure potentials. Although they have no actuality, they can be felt. With/in the typically simple relational qualities of eternal objects, the self-formation of human person identifies as politeness, whiteness, hardness, greediness, maleness, femaleness, and so on. And due to the complex relational qualities of them, abstract essence emerges which enables tremendous and successive degrees of complexity called an abstractive hierarchy. According to the *qualia* of eternal objects, love is conceivable as divine interactive energy—the quality of

relations is abstractive and practical, which are found in the human person who is experiencing all. God as primordial is actualized in human persons through love. Moreover, the human persons become divine by the luring of God due to their mentally and physically interactive hierarchy. Indeed, they are the meeting point of God and the World. They are full of freedom to decide between good and bad.

Further, the human person as an actual entity is composed of indivisibly various kinds of energy. Under scrutiny, the human person is a constituted unity of billions of quantum events. Thus, every human person experiences the transferring of quantum data from one to another entity. Still they are just a spatio-temporal drop of experience and are therefore changeable. Indeed, the human person is a nexus as well as an organic system of systems—an interconnected system of different series and societies of entities in mentality and physicality. In that nexus, chaos and complexity occur for creation. There are uncountable nexūs which are composed of series of systems and societies: personal and non-personal or physically larger groups—from quanta-to-vegetables-to-rocks and gases or liquids.

As mentioned above, any actual entity is a constituted and becoming event in which the primordial and consequent nature of God are meeting such that one can conceive about the relation of God and the World. They are inseparably connected to be meaningful between each other. God interdepends on the World to reveal who they are just as the World or creation depends upon God to become divine. They need each other: if there is no God, the World or creation is nothing, and if there is no World or creation, God is meaningless. For instance, one can ask a simple question—who worships God or to whom does God make known who they are if there is no World? How can the World be living or become great or divine if there is no God? Unlike the traditional God who is distant from the world, the process God is with/in us as the

world is with/in them, together in each other to experience sadness or happiness, failure or success, and so on. Therefore, the process God is called co-suffering God as well co-creating God—a dipolar God. By being with/in the world together, God persuasively empowers, internally energizes, and continuously enables the world to overcome and create entities to become continuously fresh and new continuously. This interrelatedness of God and the World with/in each other is the matter of *creatio continua*; and creation will go on, the way as shown above, endlessly and openly. If not, there is no continuing creation as well as no God at all. This interrelated process between God and the World is, therefore, divine and dynamic. There is no separation but relation between creator God and their creation or the World in this co-creating process. Thus, Whitehead states that God has two natures: the Primordial nature of God and Consequent nature of God.

Additionally, the Trinitarian God of Christianity is economically trinitarian, being a relational God of the Father, the Son and the Holy Spirit. Trinity, in process thought, means God is relationally One with/in Many. God here means seeing God as love energy—relational. Pluralism is clearly shown because they organize their differently unique identities and values in interrelatedness. However, the Father, the Son, and the Holy Spirit are with/in an interconnected web of divine quality of transformation. They are organically related between each other and with/in the respective identity of each. Indeed, differences are, in continuing creation, also the beauties of God.

Concretely speaking, the powerful point of process thought is "the relational quality" which enables us to go beyond and organically connect with each other. Through the quality of inter-relationality, continuing creation will be related to Natural Science. As the foundation of this dissertation is process-relational philosophy, the evolutionary process of science provides

supports for understanding Whitehead's thought on creativity as easily as a theology of continuing creation can be applied in Natural Science.

F. Transition from Process Philosophical Theology to Natural Science

The special intention for this section is to signify the distinct identity of Natural Science and its epistemological domain. Moreover, it is also to build a bridge between the three different domains of Christianity, Natural Science, and Theravada Buddhism which will be describing in the next chapter. Indeed, process thought and Natural Science are inseparably connected and supportive partners. It means the betweenness of them is necessarily interconnected. Without having the interconnected ground of Natural Science, there is no process philosophical theology (especially Alfred North Whitehead's metaphysics) because it is developed from the interconnected ground of Einsteinian Theoretical Physics and Darwinian Biology.[166] In their relatedness, process philosophical theology and natural science make each other more meaningful. At the same time, they enrich the world openly and broadly.

John B. Cobb Jr., warns that "human beings cannot live by scientific abstraction alone because patterns of scientific abstractions cannot tell us how to constitute ourselves in community with each other and with other sentient life forms with whom we share this planet."[167] By highlighting the evolving history of science, Whitehead identifies that philosophy is not distinguishable from science. As science has its own tool of inventing instruments, it also needs philosophy as its language to redesign[168] itself to have a more meaningful relationship with religion. Ian G. Barbour recommends process philosophy as a promising candidate and describes

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[166] Livingston and Schüssler Fiorenza, *Modern Christian Thought*, 313.

[167] John B. Cobb, Jr., "Global Theology in a Pluralistic Age," in *Transforming Christianity and the World*, ed. Paul F. Knitter (Maryknoll, NY: Orbis Books, 1999), 53.

[168] Whitehead*, Process and Reality*, 10-11.

it possessing a mediating role in criticizing reductionism by defending organismic categories. He points out the influence of physics and biology which brings the "process view of reality as a dynamic web of interconnected events. Nature is characterized by change, chance, and novelty as well as order…and still coming into being."[169] He also continues and highlights five such features of contemporary scientific development about which to be aware because they greatly challenge, not only Christianity but also all other religious traditions when rethinking their beliefs and practices. These features are:

> The success of methods of scientific investigation; the differences between scientific cosmologies and traditional religious cosmologies; the new contexts that science provides for theological reflection on religious understandings of human nature, particularly the doctrine of creation in the monotheistic religions; the fact of religious pluralism, which calls into question exclusive claims for any one religious tradition; and global threats to the environment and subsequent necessity for religious people to turn toward science to understand the ecological interdependence of all life forms.[170]

Arthur Peacock constructs a theology of nature by holding panentheism. He states that God creates "in and through" law and chance, the processes of natural world unveiled by science. He goes further by highlighting that "the emergence of distinctive forms of activity at higher levels of complexity in the multilayered hierarchy of organic life and mind…chance a positive role in the exploration and expression of potentialities at all levels."[171] Philip Clayton gives a broader explanation and introduces *emergent panentheism* as providing a more adequate meaning in religion and science. He highlights Peacock's emergent system and says that it expresses "a sort of nested hierarchy: parts are contained within wholes, which themselves becomes parts within

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[169] Barbour, *Religion and Science,* 104.
[170] Barbour, *Religion and Science,* xii-xv.
[171] Barbour, *Religion and Science*, 101.

greater wholes, and so forth."[172] Additionally, he affirms that the strengthened and combined domain of process philosophical theology and open panentheism provide constructive conceptual resources to open the stumbling block doctrine of *creatio ex nihilo*.[173] John C. Polkinghorne describes continuing creation, with a recommendation of process theology, in bridging between Christianity and Science.[174] The relationality between process philosophical theology and natural science give about *creatio continua* a clearer explanation. Thus, through this relational betweenness, a chapter for continuing creation in natural science follows.

[172] Philip Clayton, *Adventures in the Spirit: God, World, Divine Action*, ed. Zachary Simpson (Minneapolis, MN: Fortress Press, 2008), 129.

[173] Clayton, Adventures in the Spirit, 184.

[174] John C. Polkinghorne, *Science and Creation: The Search for Understanding* (West Conshohocken, PA: Templeton Press, 2006), 63-82.

CHAPTER FOUR

THE THEOLOGY OF CONTINUING CREATION AND CONTEMPORARY SCIENCE

After analyzing the concept of continuing creation in process theology, a way of continuity is still open to analyze its related ground—contemporary science. As the core and quality of process thought is "interrelation," the reason for this section is to broadly conceptualize a theology of continuing creation with/in the framework of natural science. Indeed, Whitehead constructs his metaphysics on the ground of both Einsteinian theoretical physics and Darwinian biology.

Contemporary science also helps the reader more clearly conceive the concept continuing creation. Moreover, Whitehead's metaphysics and contemporary science are inseparably and necessarily interconnected and supportive each other. Indeed, they are interdependent in the "betweenness of with/in" leading each other to be more meaningful. To study the ground of Natural Science. I will describe its methodological assumptions alongside specific areas of science, namely contemporary cosmology, biological evolution and information science. I will then provide my evaluation. Then, the special section for transition from Natural Science to Theravada Buddhism is continuously added.

A. Methodological Assumptions

According to South African physicist George Francis Rayner Ellis and American biologist Francisco J. Ayala, methodological reduction is assumed in Natural Science because of

its usefulness to physicists and biologists nowadays.[1] The reductionism has three inseparable areas—ontological reduction, methodological reduction, and epistemological reduction.

First, ontological reduction is a constitutive structural domain. Scientists, by holding this position, believe that "physiochemical entities and processes underlie all living phenomena and the law of physics and chemistry fully apply to all biological processes at the level of atoms and molecules."[2] In the hierarchy of complexity, there are relations between and among one another—chemistry relates to biochemistry, to cellular and molecular biology, physiology, psychology, to sociology, economics, politics, religions, and so on as interrelated and systemic organisms.[3] Ayala states that

> [or]rganisms are made up of atoms and molecules, but they are highly complex systems, and systems of systems, of these atoms and molecules. Cellular, physical, developmental, and other living processes are highly special and highly improbable patterns of physical and chemical processes.[4]

It should be noticed that although they accept that organisms are constituted by atoms and molecules, some scientists reject the bare view that organisms are nothing but piles of atoms and molecules.[5] With the sense of emergence, George Ellis argues that

> the higher levels in the hierarchy of complexity have autonomous causal powers that are functionally independent of lower-level processes. Top-down causation takes place as well as bottom-up action, with higher-level contexts determining the outcome of lower-level functioning, and even modifying the nature of lower-level constituents.[6]

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[1] David Gentile, "Physics, Reductionism, and the Real World," *Physics Today* 59, no. 3 (2006): 12, https://doi.org/10.1063/1.2195298.

[2] Ayala, "Reduction, Emergence, Naturalism, Dualism, Teleology," 76-77.

[3] George F. R. Ellis, "Physics, Complexity and Causality," *Nature* 435 (June 8, 2005): 743. https://www.nature.com/articles/435743a.

[4] Ayala, "Reduction, Emergence, Naturalism, Dualism, Teleology," 79

[5] Ayala, "Reduction, Emergence, Naturalism, Dualism, Teleology," 78.

[6] Ellis, "Physics, Complexity and Causality," 743.

Further, scientists who do not adhere to a purely physicalist view find the types of reality or the sorts of causality existing in the world. By defending ontological pluralism, Ian Barbour affirms a multilayered view of reality—layers of events and processes, and posits that higher-level events influence physical and chemical processes at lower levels by following the laws of these lower levels. According to *top-down causation* (which happens when a system influences many sub-systems) and *bottom-up causation* (which occurs when many sub-systems are influencing a system), network properties and correlations of behavior are greatly seen in various relations.[7] Moreover, even assertiveness sometimes occurs in this domain, such as the assertion that "an organism is "'nothing but organized molecules,' or that 'only physical forces' are causally effective."[8] According to these, an atheist might find a position for an argument that there is no creator God.

Second, methodological reduction, is a strategic procedural. In other words, it is the research strategy by which scientists' approach and investigate living entities and obtain scientific knowledge. In this way, they see that living beings' characteristics are a complexity of organization which gives rise to *organisms*. According to this view, a hierarchy of layers of complexity rises from atoms, through cells and multicellular sub-organisms, to other organisms and populations of organisms, communities, societies, species, systems, and so on. Scientists, by holding to methodological reduction as the best strategy, believe that doing experimental study and research at the lower-layers provides a better understanding of the relationships at higher-layers. It is a moderate position, though there are those who hold an extreme view of methodological reduction which leads to materialism. It leads to an analytical method which

[7] Ian G. Barbour, *Nature, Human Nature and God* (Minneapolis, MN: Fortress Press, 2002), 20-21.
[8] Barbour, *Nature, Human Nature and God*, 20.

provides value, knowledge, and obvious facts to understand of/about the constituted elements and living processes with/in the layers of organisms.[9] For instance, due to the analysis of molecular interactions in biology, the findings of the immune responses of antibodies, antigens, and their structures are spectacularly and satisfactorily successful. Still, this analytical method is not incompatible with multilayered analysis and the study of bigger systems.[10]

Third, epistemological reductionism, is explanatory theoretical domain. With this form of reduction, scientists relate theories between and among each other or one another claiming that "laws and theories at one level of analysis can be derived from laws and theories at lower levels."[11] In other words, there is a basic issue "whether the laws and theories of biology can be derived from the laws and theories of physics."[12] Scientists, by the connections between and among theories of epistemological reduction, can explain a certain branch of science by using the theories of others "lower" sciences (e.g physics is "lower" than chemistry which is lower than biology). Epistemological reduction, thus, gives enormous value to integrate theories and contributes to the advancement of scientific knowledge. Regardless, there are still distinct and different biological concepts which cannot be explained by physical and chemical terms.

In summary, these methods of approaching contemporary science leads one to see the world or reality as an interconnected organism of organisms. Indeed, these theoretical methods are "concepts," which means the way scientists see the reality nowadays. According to ontological reduction, one can sense that there are mainly two different views of reality—theistic and atheistic. In the theistic sense, they do not want to see any organism as a bare composition of

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[9] Ayala, "Reduction, Emergence, Naturalism, Dualism, Teleology," 77-78.
[10] Barbour, *Nature, Human Nature and God*, 20.
[11] Barbour, *Nature, Human Nature and God*, 20.
[12] Ayala, "Reduction, Emergence, Naturalism, Dualism, Teleology," 78.

atoms and molecules; atheistically it is nothing but a heap of atoms and molecules. Through these methods, one can see their positions of beliefs. The connection of these methods also gives the idea of an interconnected hierarchy of the complexity of the whole and organisms of the world. Indeed, the conclusions of these methods are similar to those Whitehead's metaphysics, *philosophy of organism*.

Grounded on these methods, the following sections will reveal, looking with the eyes of process thought, an idea of a theology of continuing creation as discernable with/in contemporary science.

B. Contemporary Cosmology

Contemporary cosmology as conceptualized by quantum physics is at the core of contemporary science because it represents the tremendous paradigm-shift of natural science—from mechanistic, Newtonian science to organic Einsteinian science. The discoveries and explanations of evolution in contemporary science are similarly helpful for understanding creativity, or the concept of continuing creation as described by process thought. In order to scrutinize the evolution of the cosmos, quantum fluctuations and the expanding of universe are crucial. Quantum physics comes out of Albert Einstein's theories of general and special relativity. The former theory is predicated upon "the idea that the laws of science should be the same for all observers, no matter how they are moving. It explains the force of gravity in terms of the curvature of a four-dimensional spacetime."[13] The latter is based on "the idea that the law of science should be the same for all observers, no matter how they are moving, in the absence of gravitational fields."[14] At the foundation of relativity is the relativity of motion, "relation"

[13] Stephan Hawking, *The Universe in a Nutshell* (New York, NY: Bantam Books, 2001), 204.
[14] Hawking, *Universe in a Nutshell*, 207.

between mass and energy is a very important consequence—famous equation $E=mc^2$ illustrates that mass and energy are equivalent. Indeed, Einstein's relativity shifts our view of space and time from a passive setting in which events occur to seeing them as active participants in the dynamic universe.[15]

Quantum thinking is an interactive quality of open potential from the quantum faith of scientists who seek the truth(s) seeking of reality.[16] Quantum theory is, thus, also called the quantum model for seeing reality. A "quantum" is a tiny and indivisible element in which waves may be absorbed or omitted.[17] Moreover, quantum theory, resulting from the collaborative work of twentieth century physicists such as Niels Bohr, Erwin Schrödinger, Wolfgang Pauli, Max Born, Max Planck, and Werner Heisenberg, is deeply concerned with the nature of light. In other words, quantum theory emerges from the interrelated knowledge quanta. This theory illustrates that light—and all quanta—exist in a "wave-particle duality,"[18] which means quanta are at once discretely wave-like and particle-like; however, according to Heisenberg's uncertainty principle, it is impossible to know the exact position of a quantum of light at the same time that one knows its velocity. The more one tries to take accurate measurements of the speed of a particle, the less s/he can be certain of its position and velocity of a quantum reveal that there is inseparable composition which is ever related together.[19]

Some quanta can be broken down into quarks, namely protons and neutrons. Each of them is composed of three quarks: "the proton consists of two up-quarks, each with +2/3

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[15] Hawking, *Universe in a Nutshell*, 11-12, 21.
[16] John Polkinghorne, *Quantum Physics and Theology: An Unexpected Kinship* (London: Yale University Press, 2007), 18.
[17] Stephen Hawking, *Brief History of Time* (London: Bantam Press, 1996), 242.
[18] Barbour, *Religion and Science*, 167.
[19] Hawking, *Brief History of Time*, 71-81.

electrical charge, and one down quark with -1/3 charge; *and* the neutron consists of two down quarks with -1/3 charge and one up quark with +2/3 charge, giving a total electric charge of 0."[20] What is more, quarks are also varied and described in six *flavors*—up, down, strange, charmed, bottom, and top. Physicists give them imaginative names, such as referring to them according to the colors red, green, and blue—though they do not have colors in normal sense. So, a proton or neutron is composed of three quarks, one of each color. Moreover, there are quarks and antiquarks. As tinier particles, protons are colliding with other protons or electrons at rapid speeds. Therefore, there is a rapid decaying and generating of other quarks such as strange, charmed, bottom, and top in this unnoticeable state.[21]

In the process of quantum theoretical development, the Scottish physicist James Clark Maxwell's discovery of field thinking in 1860 showed that electricity, magnetism, and light are intimately related. His equations describe that electromagnetic fields of force could be found throughout space as waves.[22] According to the Standard Model, every particle can also be described in relation to the four fundamental forces of the universe.[23] They are:

1. Gravitational force

   This force is universal, unnoticeable, and attractive. Even though it is the weakest of the four, it acts over long distances such that each particle feels the force of gravity according to its mass or energy. Unnoticeably, gravitons are moving with the speed of light according to Einstein's general relativity. This very weak gravitational force can add up to produces a significant force between two large bodies, such as the sun and the earth.

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[20] Hawking, *Brief History of Time*, 86.
[21] Hawking, *Brief History of Time*, 85-87.
[22] Stephan Hawking and Leonard Mlodinow, *The Grand Design* (New York: Bantam Books, 2010), 90-1.
[23] Bonting, *Creation and Double Chaos*, 18.

That there is the exchange of gravitons makes effective so that the earth orbits the sun. This force also has some influence over the other three.

2. Electromagnetic force

This force is also long-range but is much stronger than gravitational force. It is 10^{42} times as powerful as gravity. It interacts with electrically-charged particles, e.g. electrons and quarks. Actually, it functions repulsively between charges of the same signs while it functions attractively between opposite charges. Thus, it means the repulsive and attractive forces between single particles cancel each other out. For instance, large bodies such as the sun or the earth have equal amounts of attractive and repulsive force so that they retract each other. Indeed, the electromagnetic force is carried by photons, or particles of light. The massless photons are virtual because when there is change or collide in a nucleus, energy being consumed and absorbed. However, no interaction is found with uncharged particles like gravitons. This force is accountable for the field of chemistry and biology.

3. Weak Nuclear Force

This force is short range and is responsible for radioactivity. It functions, in the role, of organizing the elements in stars and the early universe. It is known that collective vector bosons carry this force. Actually, this force only acts on particles, with the exception of photons and gravitons.

4. Strong Nuclear Force

This force is responsible for holding quarks together in protons and neutrons, as well as helping to hold together atomic nuclei. This force is carried by gluons which are tinier than quarks. Gluons have the quality to interact only with themselves and with the other

> quarks. However, no single quark stands alone because quarks have color (red, green, or blue) so that each colorful quark is joined to any different colored quarks by a string of gluons into a triplet constituent. In this place, gluons as particles are, in a certain sense, metaphysical and can create the whole notion of quarks. Moreover, the pairing of a quark and an antiquark is also possible. This combination arises from meson particles, but these are unstable because they annihilate each other and produce electrons and other particles. This force has the unique potential of confinement such that it always binds particles together into colorless combinations, and it has the potential to create the concept of quarks and gluons.[24]

It should be noted that electromagnetism and the two nuclear forces are both attractive and repulsive while gravity is only attractive. Indeed, the word *forces* means "interactions." Force-carrying particles are thus observed due to their strength of interaction.[25]

Next is the quantum theory of the electromagnetic field, also called quantum electrodynamics or QED. Formulated by American physicist Richard Feynman and others, it is notable for describing how forces are transmitted by fields. This realization has been developed further to become various quantum field theories.[26] According to the quantum theory of electromagnetic field, there is not a single history but many probable and different histories of

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[24] Hawking, *A Brief History of Time*, 90-96; Hawking and Mlodinow, *The Grand Design*, 103-4.

[25] Hawking, *A Brief History of Time*, 90-96; Hawking and Mlodinow, *The Grand Design*, 103-4.

[26] Hawking and Mlodinow explain that, in quantum field theory, the forces fields are visualized as being made of various elementary particles called bosons, which are force-carrying particles that fly back and forth between matter particles, transmitting the forces. The matter particles are called fermions. Electrons and quarks are examples of fermions. The photon, or particles of light, is an example of a boson. It is the boson that transmits the electromagnetic force. What happens is that a matter particle, such as an electron, emits a boson, and recoils from it, much as a cannon recoils after firing a cannonball. The force particle then collides with another matter particle and is absorbed, changing the motion of that particle. According to QED (Quantum Electro-Dynamics), all the interactions between charged particles—particles that feel the electromagnetic force—are described in terms of the exchange of photons. Hawking and Mlodinow, *The Grand Design*, 104-5.

the universe when looking at the whole. Like the future, the unobserved past is also indefinite but full of possibilities.[27] Stephan Hawking and Leonard Mlodinow state that

> Quantum physics might seem to undermine the idea that nature is governed by laws, but that is not the case. Instead it leads us to accept a new form of determinism: Given the state of as system at some time, the laws of nature determine the *probabilities* of various futures and pasts rather than determining the future and past with certainty…. It is important to realize that probabilities in quantum physics are not like probabilities in Newtonian physics, or in everyday life.[28]

Interestingly, Hawking and Mlodinow describe M-theory,[29] which comes out of String Theory[30] and Supergravity[31], which can be a single formulation as well as a network. The letter M might stand for "master," "miracle," or "mystery," and all three. This theory consists of eleven space-time dimensions. M-theory is also the theory of more fundamental laws. Therefore, this theory "allows for *different universes* with different apparent laws, depending on how the internal space is curled… has solutions that allow for many different internal space…for different universes, each with its own laws."[32]

According to the Heisenberg uncertainty principle, Hawking and Mlodinow say that "the value of a field and its rate of change play the same role as the position and velocity of a particle. That is the more accurately one is determined, the less accurately the other can be."[33] Related to this statement, a crucial consequence is observed that there is no empty space. This empty space

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[27] Hawking and Mlodinow, *The Grand Design*, 82-83.

[28] Hawking and Mlodinow, *The Grand Design*, 72-73.

[29] Stephan Hawking defines this as a theory that unites all five string theories, as well as supergravity, within a single theoretical framework, which is not yet fully understood. Hawking, *The Universe in a Nutshell*, 205.

[30] Stephan Hawking states that string theory, also known as superstring theory, is a theory of physics in which particles are described as waves on strings. This theory unites quantum mechanics and general relativity. Hawking, *The Universe in a Nutshell*, 207.

[31] Stephan Hawking identifies this as a set of theories unifying general relativity and supersymmetry. Hawking, *The Universe in a Nutshell*, 208.

[32] Hawking and Mlodinow, *The Grand Design*, 118.

[33] Hawking and Mlodinow, *The Grand Design*,113.

is not such that the empty space of both field's value, and rate of change are absolutely zero. If they are not zero, then the space is not empty. So, empty space is still full of infinite vacuum energy which is subject to quantum fluctuations that particles and fields are vibrating infinitely in and out of existence.[34]

With the interconnected ground of Einsteinian theoretical physics—relativity, quantum theory, and QED—mentioned above, contemporary cosmology will be analyzed. Noting, enormous influence of the Big Bang model, Roger Penrose and Stephan Hawking agree that the universe had a beginning. According to general relativity, the universe started as a densely twisted formation of infinite temperature and density called big bang *singularity*. The model assumes a gigantic explosion before the Plank time, or 10^{-43} seconds after the Big Bang.[35] The beginning of the universe is $\pm$ 13.78 billion years before present. (No one knows the absolute t=0 time.) The initial explosion of Big Bang created time and space, physical laws, the fundamental forces, and all the matter and energy of the universe. Observing the decrease in temperature, physicists have proved that the universe is expanding. The following discoveries of Edwin Hubble (1920), Alexander Friedmann (1922), Arno Penzias, and Robert Wilson (1965), confirm the expansion of the universe as it forms galaxies that are also moving away from each other.[36] Sjoerd L. Bonting mentions four facts which demonstrate the expansion of the universe when constructing his theology of continuing creation:

1. The spectral lines of the galaxies have a red shift, meaning the wavelength of their light waves is expanding, which happens when objects are moving away from us;
2. The ratio of hydrogen to helium in the universe is three to one, as the theory predicts;

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[34] Hawking and Mlodinow, *The Grand Design*, 113.
[35] Hawking, *The Universe in a Nutshell*, 76-80.
[36] Hawking, *The Universe in a Nutshell*, 74-79; *Brief History of Time*, 54-55

3. There is a cosmic microwave background (CMB) radiation, which is explained as the afterglow of the explosion;
4. And very light ripples have been observed in this radiation, a condition essential for star formation.[37]

Furthermore, the evolution of the cosmos was rapid. After gravity split away from unified force within a Plank time, the fledgling universe underwent a rapid expansion within a fraction of a second—10^{-30} seconds, during which time the fine structure of cosmic microwave background developed. During this inflationary period, the strong nuclear force separated off, and the first particles (such as electrons, quarks, and gluons) developed from photonic energy. Then the universe steadily continued its expansion. Both electromagnetism and the weak nuclear force separated from one another the four fundamental forces were functioning "independently" at 10^{-10} seconds. This condition enabled smaller gluons and quarks to form hydrogen nuclei and neutrons. Radiation dominated over matter at three minutes, and protons and neutrons formed deuterium (viz. heavy hydrogen) and helium nuclei. The sufficiently declining temperature after three hundred thousand years allowed hydrogen, deuterium, and helium atoms to form. Then, matter became the dominating presence of the universe. At the time, the universe contained seventy-three percent hydrogen and twenty-seven percent helium. This condition led to the formation of stars and galaxies.[38] Physicists reach three fundamental conclusions, namely,

1. The universe is finite with a diameter of at least 78 billion light-years.
2. Inflation was nonchaotic, implying that there is only one universe.
3. The surface of Einsteinian space-time is "flat," which means there is an exact balance between expanding force and gravity, so that the universe will neither undergo collapse (a "big crunch") nor expand forever.[39]

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[37] Bonting, *Creation and Double Chaos*, 20.
[38] Bonting, *Creation and Double Chaos*, 22.
[39] Bonting, *Creation and Double Chaos*, 22.

In the expanding cloud of the early universe, the earliest developed as big solar masses 200 million years after the Big Bang. When these ripples of hydrogen and helium increased in density the co-effects of gravity and cooling made them rotate and contract. Their rotations gradually became flat, hot, and dense with hydrogen fusion, and they began to spin more rapidly in the evolving space and time. In this way, the first galaxies appeared 500-million years. Following the formation of stars and galaxies, clusters of galaxies develop after 1.4-billion years. The Milky Way, our own spiral galaxy (which is one of countless galaxies in our universe) formed after about 3 billion years.

Due to the large cloud of hydrogen and helium released from dying stars, our galaxy is rich with elements like calcium, sodium, titanium, iron, and potassium, as well as galactic dust consisting of ice, ammonia, methane, silicates, silicon carbide, and so on. Moreover, stars are the keys to the continued formation of galaxies when interstellar gas and dust are collapsed by gravity. Approximately ten stars are formed every year, and there are 10^{22} stars in the universe. On top of all of this, it should be noted that there are two black holes at the center of Milky Way.[40] What is more, the sun is a small star which will likely turn into a red giant 5-billion years. When the sun uses its last fuel up, it will become a white dwarf before it then turns into a cold and dark black dwarf.[41]

Our solar system, one of the systems in the Milky Way formed 9 billion years after the Big Bang or 4.5 billion years ago. Indeed, the earth is only a tiny dot among the seven other planets of our planetary system. (Inter)Depending on their distance from the sun, the compositions of a given planet varies. The inner planets—Mercury, Venus, Earth, and Mars—are

[40] Hawking says that a "black hole" is, not black. It is a region of space-time from which nothing, not even light, can escape because gravity is so strong. Hawking, *A Brief History of Time*, 240.

[41] Bonting, *Creation and Double Chaos*, 24-25.

rocky, being comprised of silicate and metallic iron or nickel; in contrast, the outer and large planets—Jupiter, Saturn, Uranus, and Neptune—are icy and gaseous. Meaningfully, the moon, a similar size of Mars, is also formed and orbits the earth. According to Einstein's equation $E=mc^2$, scientists have determined that seventy percent of the mass of the universe is comprised of "dark energy," approximately twenty-five percent of the universe's mass is comprised of "dark matter," and therefore only five percent of the mass of the universe is visible matter. Indeed, dark energy is a form of negative gravity and facilitates the universe's accelerated expansion. The following table from Bonting illustrates the process of cosmic evolution.[42]

Cosmic Evolution

Time Elapsed	Temp. (°K)	Energy (GeV)	Event
≥0	?	?	Big bang; not accessible to physical theory
10^{-43} sec	10^{32}	10^{19}	Gravity separates from unified forces
10^{-35} sec	10^{28}	10^{15}	Inflation takes places; strong nuclear force separates; photons produce quarks and electrons; steady expansion begins
10^{-10} sec	10^{15}	10^{9}	Electromagnetic and weak nuclear forces separate
10^{-4} sec	10^{12}	10^{3}	Protons and neutrons form from quarks and gluons
3 min	10^{9}	10^{-4}	Radiation dominates; protons and neutrons form deuterium and helium nuclei
300,000 yr	$3x10^{4}$	10^{-9}	Matter dominates; electrons bind to nuclei, forming atoms; transparent universe; ripples in radiation
$1x10^{9}$ yr	10^{2}	10^{11}	Formation of galaxies, stars, and chemical elements
$9x10^{9}$ yr	10	10^{12}	Formation of solar system
$14x10^{9}$ yr	2.7	10^{-13}	Present universe

Explanations:
°K is temperature above absolute zero (-273^0C)
1 GeV = 109 electron-volts = 1.6 x109 joules
In powers of 10, the exponent equals the number of zeros: 10^8 = 100,000,000; 10^3 =1,000; 100 =1; 10^{-1} = 1/10; 10^{-3} = 1/1,000; and 10^{-8} = 1/100,000,000.[43]

[42] Bonting, *Creation and Double Chaos*, 21.
[43] Bonting, *Creation and Double Chaos*, 21.

To sum up, cosmology is the study of cosmic evolution using mathematics and, by means of the method of reduction (but not reducible), the physical science to arrive at an understanding about how the cosmos or the world came to be (and continues to develop). Together with myriad theories and hypotheses, physicists have discovered the cosmological processes governing how the universe began in the midst of a massive explosion we call the "Big Bang." (Of course, the pre-Big Bang state of the cosmos remains unknowable outside of highly abstract theories. Due to the subtle and interactive process of atomic matter, gases, chemical elements, and so on, enormous systems of stars, galaxies, solar systems—as well as countless other universe which are theoretically possible –have been coalescing for the last fourteen billion years. Compared to biological evolution, cosmic evolution is like looking at a large forest from above where we see the "whole," while biological evolution is looking at a large forest from within where we see the "parts." However, the evolution of the cosmos and the evolution of bios are necessarily interconnected to be meaningful and fruitful between each other. In other words, without cosmos, there is no bio (life or me) and vice versa. Moreover, contemporary science provides practical explanation for what process thought explains philosophically. From the side of process thought, therefore, they are inseparable. Having mentioned biological evolution, it is helpful to explore its connections to process thought in order to develop a deeper understanding of continuing creation.

C. Biological Evolution

An explanation of biological evolution is visually understandable for how the world is constantly becoming. In addition, it draws the reader closer to discerning a theology of continuing creation in their daily experiences. The long evolving process of cosmos is a necessary condition for biological evolution to occur, one spiraling into the other. Indeed, the

inorganic evolution of the universe is complexly related to the evolution of life: the by-products of cosmic evolution become the constituent components of biological evolution. Although scientists have made limited discoveries regarding "prebiotic evolution" how the first living cell arose in prebiotic evolution is crucial for the origin of life.

According to the model experiment from the laboratory and speculation, prebiotic evolution is observed by tracing back to the time after the earth was formed because there is no evidence in the fossil record. After being formed, the earth's interior was coalesced by the impacts of asteroids and meteorites during an initial period. Erupting volcanoes emitted gases and formed the primeval earth. Since oxygen was virtually not present in the atmosphere, there was no ozone layer at all in that time. Ultraviolet radiation could thus directly reach on the earth surface, allowing the formation of biomolecules, like amino acids, which were securely stored in the depths of oceanic water. Alternatively, hydrothermal vents could have released hot gases at bottom of the ocean. Consisting of hydrogen, hydrogen sulfide, methane, ammonia, and carbon monoxide, these gasses facilitated the formation of amino acids and nucleotides, forming due to the reactions *or interactions* of temperature from the vent and clay or pyrite minerals. Through chemo-synthesis, these chemicals could gradually combine to form proteins and nucleic acids which are the basic building blocks for a living cell and organisms.

Regardless of how the first building blocks of life were formed on the primeval earth, it has been documented how ancient microfossils indicate the presence of the first living cell (i.e., an amoeba) on our planet about 3.5 billion years ago.[44] The following table showcases rough markers for the rise of the life on earth.

[44] Bonting, Creation and Double Chaos, 28.

Tentative Course of the Prebiotic Evolution

Billions of Years BP*	Events
4.6	Formation of Earth
4.1	Beginning of prebiotic evolution: • Synthesis of building blocks • Organization in micelles • Replication mechanism
3.5	Appearance of first living cells
2.7	Appearance of nucleated cells
2.4	Beginning of oxygenic photosynthesis • Oxygen accumulation in atmosphere
2.0	Appearance of mitochondria • Beginning of oxidative metabolism
1.7	Appearance of multicellular organisms
0.9	Present oxygen level reached
0.54	Cambrian explosion of biological evolution

*BP=before present[45]

Further, American biologist James Watson and English physicist Francis Crick discovered the molecular structure of the double-helical B-form nuclei acid DNA (Deoxyribocleic acid) and A-form nuclei acid RNA (Ribonucleic Acid) in 1953. This double helix structure of nucleic acid is the principle genetic material of all living cells and organisms. It is, constituted by complex molecules which contain carbon, oxygen hydrogen, nitrogen, and phosphorus. Despite its complexity, being comprised of thousands upon thousands of bases, even a particular macro-molecular or polymeric chemical compound like DNA is composed of only four different nucleotides: Adenine, Cytosine, Guanine, and Thymine. Indeed, DNA, which is bond of phosphoric acid, deoxyribose sugar, and nitrogen based, is the carrier of genetic information. It has two crucial functions: heterocatalytic, or the directing of the synthesis of

[45] Bonting, Creation and Double Chaos, 27.

chemical molecules, evolving into multiple pieces, stably keeping information, and producing the plasma membrane; and the autocatalytic, or self-replication directing the synthesis of DNA itself by enzymes.[46] Due to the interactions of nucleotides in cell division period, DNA helices are separated in order to form new ones. Due to the possibility of mis-replication and nucleotide fragmentation, mutations can and do occurs.[47]

RNA, is non-genetic but heterogeneously functions in translating nucleotide sequences into amino acid which are ordered into proteins and protein chains that essential for organic evolution. Examples of kinds of RNA are ribosomal (rRNA), transfer (tRNA), and messenger (mRNA). Although the so called non-genetic RNA is not self-replicating, it has DNA-*inter*dependent replication. However, each strand of RNA is polynucleotidic because it is composed of many ribonucleotides. So, the ribose and phosphoric acids of nucleotides are retained by phosphodiester constituents.[48] What has been recently discovered is that RNA can function as an enzyme that connects amino acids to form proteins.[49]

There are several similarities and differences between DNA and RNA. Regarding similarities, both are nucleic acids; both are composed of nucleotides; both have sugar phosphate backbone; and both are comprised of four different types of bases. Pertaining to differences, however, DNA is double-stranded and found in the nucleus while RNA is single-stranded and found both in nucleus and cytoplasm (viz. the intracellular medium). Additionally, DNA is the genetic material whereas RNA is a helper to DNA. The sugar in DNA is deoxyribose, the bases

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[46] P.S. Verma and V. K. Agarwal, *Cell Biology, Genetics, Molecular Biology, Evolution, and Ecology* (New Delhi, India: S. Chand & Company Ltd, 2008), 16-29, 153-154.

[47] Barbour, *Religion and Science*, 226.

[48] P.S.Verma and V. K Agarwal, *Cell Biology: Cytology, Biomolecules and Molecular Biology* (New Delhi, India: S Chand and Company Limited, 2016), 718-719.

[49] Bonting, *Creation and Double Chaos*, 28.

for which are A, T, C, G (listed above); in contrast the sugar in RNA is ribose, the bases for which are A, U(racil), C, G. DNA is transcribed to produce mRNA while RNA is translated to produce proteins.[50] As Barbour summarizes,

> [an] important property of genes is the control of developmental processes. All living organisms are composed of protein chains buil[t] on … simpler building blocks, the twenty amino acids. The DNA remains in the cell nucleus, but its distinctive sequences are copied on single strands of messenger-RNA and carried to other parts of the cell, where amino acids are assembled into protein chains. It was found that there is a genetic code in which a distinctive group of three bases corresponds to each of the twenty amino acids. The order of the triplets in the DNA determines the order in which the amino acids are assembled into protein chains.[51]

Therefore, in this chicken-and-egg like problematic, RNA can be seen again as the origin of genetic code which can also form DNA. These basic molecules—DNA, RNA, and protein enzymes—construct a genetic system which takes on the responsibilities of protein synthesis and replication.[52]

The next crucial step for the emergence of life is photosynthesis and oxidative metabolism. By photosynthesizing, cyanobacteria like blue-green algae developed approximately 2.7 billion years ago. Due to the photosynthetic system with chlorophyll, the green colored plants developed the process of converting carbon dioxide and water into carbohydrates and oxygen through the interaction of solar energy.[53] Bonting identifies three consequences for the emergence of life:

1. The quantities of oxygen produced by the Cyanobacteria changed the original virtually oxygen-free atmosphere into the present oxygen-rich atmosphere between 2.4 billion and 0.9 billion years [ago].
2. The action of solar ultraviolet radiation on oxygen in the upper atmosphere led to the formation of the ozone layer, which has ever since protected life on

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[50] Verma and Agarwal, *Cell Biology*, 719.
[51] Barbour, *Religion and Science*, 226.
[52] Bonting, *Creation and Double Chaos*, 28.
[53] Bonting, *Creation and Double Chaos*, 29.

Earth from the solar ultraviolet radiation, eventually allowing plants and animals to emerge from the water and inhabit the land.

3. The presence oxygen prompted the development of oxidative metabolism, which provides the cell with much more energy than the earlier anaerobic metabolism (about nineteen times as much per molecule of glucose utilized). Oxidative metabolism enabled the formation of multicellular organisms, opening the way to more complex life-forms.[54]

Then, the co-related development conditioned by oxygen in the atmosphere and the development of the ozone layer, oxidative metabolism, eukaryotic cells, and multicellularity enabled the emergence of all phyla of animals and plants in a 540-million-year period called the Cambrian Age. Finally, the carbon cycle has been developed so that there is, via plant photosynthesis, the conversion of carbon dioxide to oxygen for animal respiration; reciprocally, oxygen is, by animal respiration, converted into carbon dioxide for plants. In this way, the carbon cycle equilibrium is essentially maintaining the existence of life on Earth. This evolving process is briefly illustrated in the following table:[55]

Course of Biological Evolution

Millions of Years BP[a]	Geological Period	Main Events
	Paleozoic Era	
540	Cambrian	Explosion of phyla, first chordates[b]
500	Ordovician	Sudden diversification of metazoa[c]
430	Silurian	First vascular land plants, insects
395	Devonian	First amphibians
345	Carboniferous	Scale trees, seed ferns, first reptiles
270	Permian	Major extinctions; diversification of reptiles
	Mesozoic Era	
225	Triassic	First mammals, first dinosaurs
190	Jurassic	Diversification of dinosaurs; first birds

[54] Bonting, *Creation and Double Chaos*, 29.

[55] Bonting mentions that the evolving process is to be viewed from the connected and different dimensions of paleontology. The fossils were first dated from the geological age of the sedimentary rock formations in which they were found, and later by means of radioactive dating methods, comparative anatomy; comparative embryology, geographic distribution of species (which played a key role in Darwin's formulation of the theory of evolution), and molecular biology (which has unraveled the genetic system and, by comparing DNA and proteins from different species, has confirmed the evolutionary tree constructed from the fossil evidence). Cf. Bonting, *Creation and Double Chaos*, 31.

135	Cretaceous	First primates
65		Extinction of dinosaurs
	Cenozoic Era	
65	Paleocene	Diversification of birds, mammals, primates
53	Eocene	More advanced primates
36	Oligocene	Primitive apes
26	Miocene	*Ramapithecus*
6	Pliocene	*Australopithecus*
2.6		*Homo habilis*[d]
2	Pleistocene	*Homo erectus*[e]
0.3	Holocene	*Homo sapien*[f]

[a]BP = *before present*
[b]*Animals with dorsal stiffening rod*
[c]*Muticellular organisms*
[d]*Dwelling human*
[e]*Standing human*
[f]*Intelligent human*[56]

The long process of biological evolution has likely been occurring across the dynamic cosmos. On our planet alone, many large species have been lost due to the catastrophic impacts of asteroids, massive volcanic eruptions, climate change, acid rain, and oceanic oxygen depletion by enormous discharges of carbon dioxide. For instance, it was discovered that small animals such as small insects, smaller reptiles, birds, and early mammals survived the extinction event which killed-off the dinosaurs. Evolution has since accelerated (to our knowledge) as a result of interbreeding in both plants, and animals. Bonting provides another table which illustrates how this accelerated process of evolution has impacted the development of humanity:

Main Stages in Human Evolution

Thousands of Years BP[a]	Species	Characteristics	Skull Capacity (cubic cm)
65,000	Primates	Lemur/tarsier-like tree dwellers	
13,000	*Pierolapithecus*	Beginning bipedalism?	400
6,000	*Australopithecus*	Hominid; bipedalism	440-520

[56] Bonting, *Creation and Double Chaos*, 32.

5,000		Split between chimpanzee and human lines	
2,600	*Homo habilis*	Dwelling (hut); making and using tools	640
1,900	*Homo erectus*	Advanced tool production; fire	800-1,100
1,000	*Pithecanthropus*	Cave dweller; fire	880
460	*Sinanthropus*	Cannibalism?	1,040
195	*Homo sapiens*		1,200-1,600
150	Neandertal	Burial rites; advanced tools	1,490
40	Cro-Magnon	Refined tools, ornaments murals	1,510

[a]BP = *before present*[57]

Starting about sixty-five million years ago, what we now know as the modern human began to develop—albeit not in any truly developed form. It took tens of millions of years for the first hominids to branch off from our evolutionary cousins, the other primates, especially our fellow great apes. Early primates were tree dwellers. They gradually split off from our most recent common ancestor with chimpanzees. After another million years (give or take), our ancestors became cave dwellers and tool makers. They "discovered" fire and were able cook their food, primarily meat. (This pre-digestive process allowed our ancestors to garner more nutrients form their food without the same internal calorie cost of consuming raw foods.) In time our ancestors began to walk, two legs instead of four, allowing them to utilize their cognitive and emotional intelligence in novel ways such as the celebration of burial rites and other ceremonies. All of these behavioral differences are significant when we consider that there exists only a roughly two to three percent genetic difference between ourselves and modern chimpanzees. Bonting refers to eminent primatologist Frans de Waal in explaining some basic characteristics regarding the evolution of moral behavior:

a. Kin concern—Males will defend females and young against predators, food is shared, and often sick or injured animals are supported.
b. Reciprocity—Unrelated animals share food but refuse the next time around if the favor is not returned.

[57] Bonting, *Creation and Double Chaos*, 38.

c. Sympathy—A mongoloid rhesus monkey was continuously assisted by its mother and sisters. A chimpanzee placed an arm around an animal that has lost a fight.
d. Norm behavior—Stingy animals in food sharing are rebuffed at later meal. Two chimpanzees who were late for dinner and thus delayed the feeding of all others were later beaten up and were the first for dinner next day.
e. Inequity aversion—Capuchin monkeys lay down tools if they see another monkey get a bigger reward for doing the same job.[58]

The interesting differences between monkeys and apes is that only apes show consolation behavior, mete out punishment for violating norms of behavior, and accept other benefits such as grooming or the exchanging of food.[59]

According to neuroscience, the human being has, a complexly interconnected unity of both body and mind called a "psycho-somatic unity"— both external and internal relations.[60] American biochemist Robert L. Herrmann also views human beings as an emergent phenomenon and as psychosomatic unities comprised of complex physical, mental, and spiritual capacities. An exemplar of this complexity is found in the connection between the human brain and the nervous systems: "[T]he nervous system is a network with[in] the body that functions to manipulate external and internal information. It is specialized for rapid communication of signals throughout the body, and the brain is considered to be the locus of central control in the nervous system."[61] There are literally billions of receptors carrying information from all parts of the body—10^{14} neural and synaptic interconnections function to provide respective sorts of

[58] Bonting, *Creation and Double Chaos*, 38-41.
[59] Bonting, *Creation and Double Chaos*, 41.
[60] Philip Clayton, "Neuroscience, the Person and God: An Emergentist Account," *Zygon Journal of Religion and Science* 35, no. 3 (January 21, 2004): 630. https://doi.org/10.1111/0591-2385.00301.
[61] David E. Presti, *Foundational Concepts in Neuroscience: A Brain-Mind Odyssey* (New York: W.W. Norton, 2016), 7.

cognition, perception, emotions, and memories across regions of the brain.[62] As David E. Presti explains, that

> our experience of the world depends on the physical properties of our sensory receptors: eyes are sensitive to a limited range of energies of electromagnetic radiation, ears to a limited range of frequencies of mechanical vibration, noses to a limited range of molecular shape, and so forth. Then, the signal from sensory receptors are manipulated by the nervous system and, particularly in us humans, by our brain. Billions of cells and trillions of synaptic connections are impacted by information received via sensory pathways. This interaction of neural networks with incoming sensory information somehow forms the basis, it is believed, for our mental experience of the world.[63]

Regarding neurobiological assessments of the mind-brain relationship, Herrman states that "consciousness is an emergent behavioral state, one that follows a convergence of perceptions, memories, and emotions."[64] He adds a speculative perspective by claiming that the brain system is chaotic and self-organizing in a nonlinear style and that it is subject to spontaneity and creativity.[65]

Barbour, referring Roger Sperry's multilevel view, posits that mental states are higher level emergent properties of the brain with/in an evolutionary hierarchy. He continues to say that there are mutual reciprocal interactions (not interventions) the supervening between the neural and mental levels of twisted brain hierarchies, together with information. The interactions between diverse entities and levels can also be called the levels of experience or what process calls "panexperienctialism" (but not pansychism). It is claimed that only in the human being,

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[62] Philip Clayton, "Neuroscience, the Person, and God: An Emergentist Account" in *Neuroscience and the Person: Scientific Perspective on Divine Action*, ed. by Robert John Russell, Nancey Murphy, Theo C. Meyering and Michael A. Arbib (Vatican City: Vatican Observatory Publication and the Center for Theology and Natural Science, 1990), 10, 17.

[63] Presti, *Foundational Concepts in Neuroscience*, 127.

[64] Robert L. Herrmann, "Emergence of Humans and the Neurobiology of Consciousness" in *In Whom We Live and Move and Have Our Being: Panentheistic Reflections on God's Presence in a Scientific World*, ed. Philip Clayton and Arthur Peacocke (Grand Rapid, MI: William B. Eerdmans Publishing Company, 2004), 122-126.

[65] Herrmann, "Emergence of Humans and the Neurobiology of Consciousness," 128-129.

with/in the complex systems of the evolutionary process, does self-consciousness arise[66] even though all entities demonstrate some degree of self-determination.[67]

By affirming panentheism, Philip Clayton says that there are four transitions in the processual phenomena of emergence: "(1) quantum physics to macro-physical systems and chemistry, (2) chemistry to complex biological organisms, and ecosystem, (3) the brain and central nervous system to the phenomena of consciousness or "mind," and (4) the emergence of spirit within the natural order, including the question of its ultimate nature and origin."[68] Although there are whole and parts which influence each other, he points out that top-down causal effects are non-reducibly present at multiple-layers. Regarding a human personhood, both a living body and a functioning brain are necessary. Indeed, personhood is not completely translatable into "lower level" terms because it requires causal and phenomenological properties—or *qualia*—which are uniquely personal. Moreover, divine action (or "double-agency" in Austin Farrer's terms), occurs in this interacting process because every action has the role of causality for others as well as the role for God—the first is called the secondary cause while the latter is primary cause. In other words, it is called the relation of horizontal and vertical planes to divine agent. This view implies that the action or relation of God in the world is exists as divine *persuasion*.[69]

In summary, biological evolution is about the study of the evolution of life. It is related to cosmic evolution, such as regards the details about how life is becoming—from the minute co-interactions RNA and DNA to macro-level of inanimate and animate entities' interactions

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[66] Barbour, *Religion and Science*, 262.
[67] Barbour, *Religion and Science*, 288.
[68] Clayton, *Adventures in the Spirit*, 191.
[69] Clayton, *Adventures in the Spirit*, 196-197.

including cultural and systemic evolutions. When thinking of biological evolution, one needs to include thinking about the evolution of mind and morality because the physical body and the mental body are inseparable within the web of life. Due to the interconnections of downward and upward causations of hierarchy, dynamicity and divinity are emerging. Divine agency as well as double-agency in entities is interestingly conceptualized. Compared to process philosophy, this section shows how actual entities/occasions, including subjects and superjects, plus nexus of creativity are becoming through prehension. In other words, this section helps the reader see how the living and non-living creatures are interconnectedly co-evolving.

D. Information

The key to Natural Science is information, which functions in the role of "interactions." It plays out *how* cosmic and biological evolutions occur. Without information, there is no evolution. In the field of science, the sequentially related series—chaos, complexity, and entropy are interconnected in information. Chaos, as a system, is "the generation of complicated, aperiodic, seemingly random behavior from the *iteration* of a simple rule. This complicatedness is not complex in the sense of complex systems science, but rather it is chaotic in a very precise mathematical sense," while complexity as a system is "the generation of rich, collective dynamical behaviour from simple *interactions* between large number of subunits. . . . The interactions between the subunits of a complex system *determine* (or *generate*) properties in the unit system that cannot be reduced to the subunits (and that cannot be readily deduced from the subunits and their interactions)."[70] These properties are called emergent properties. Although they have some common characteristics, they are different concepts. Therefore, chaotic systems

[70] Dean Rickles, Penelope Hawe, and Alan Shiell, "A Simple Guide to Chaos and Complexity," *Journal of Epidemiology and Community Health* 61, no. 11 (November 2007): 934, doi: 10.1136/jech.2006.054254.

need not be complex, nor do complex systems need not to be chaotic.[71] Indeed, chaos qua disorder is unpredictability. Relating to the unpredictability of chaos, entropy is conceptualized as the measure of chaos. Due to the loss of information, entropy and chaos tend to increase in a closed system because information matters for encoding, decoding, and transferring within the wider context of interpretation. Thus, reality is not simply comprised of matter and energy, but it is composed of matter, energy, *and* information.[72] According to Bonting,

> there is an inverse relation between information content and entropy, such that at t=0, the information content of the universe is zero, while the entropy (disorder) is infinite. Thereafter, during cosmic evolution, the information content increases, and the entropy decreases, indicating increasing order. This agrees with the insight obtained by cosmologists from quantum-gravity theory, which poses that at t=0, there could be no information in the beginning universe. Thus, science suggests that chaos was maximal at the beginning of the universe and has been steadily decreasing ever since but is not abolished until the end of time.[73]

In the randomness of quantum events like a billiard ball, probabilities and possibilities occur via quantum information in the mutual complementarity of the wave-particle duality. For instance, it is not able to get the accurate prediction and proof of weather condition for more than about a week ahead due to the dynamic complexities of chaotic events that the very sensitive, non-linear thermodynamic systems lead to many initial changes.[74]

Also, in Biology, the communication of information in a spontaneous, self-organizing process like the formation of DNA is also crucial because both infinitesimal internal and external drives lead to initial evolutionary changes in the random assemblage of amino acids in the formation of proteins. In the interrelated process of information, many mutations occur as a result of replication errors, thus leading to the emergence of random variation. For instance,

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[71] Rickles, Hawe, and Shiell, "A simple guide to chaos and complexity,"
[72] Barbour, *Nature, Human Nature, and God*, 15, 24-25.
[73] Bonting, *Creation and Double Chaos*, 96-97.
[74] Bonting, *Creation and Double Chaos*, 101-103.

diverse diseases including Alzheimer can occur, owing to the misfolding of proteins.[75] Furthermore, in the top-down causation of neural hierarchy, the informational changes or interaction patterns of molecules, synapses, neurons, the neural network, and the brain is dynamically important. At the macro-level of an eco-system, a species' survival mainly interdepends on co-evolving interactions with other species in the form of both competition and co-operation.[76]

Due to the informational phenomenon mentioned above, physical and moral evils are clearly understandable. Bonting asserts that physical evils in terms of earthquakes (no scientist finds when it will happen yet), volcanic eruption, Tsunamis, and Nargis happen because of the chaotic behavior of earth's interior. Additionally, the chaotic nature of the earth's atmosphere leads to many natural evils such as tornadoes, floods, draught, and so on, which cause immeasurable suffering to human and non-human communities. Bodily diseases like cancer and mental illness come out of the remaining chaos of bodily information of cells and others. In turn, moral evils (systems evils) occur because of the information of chaotic thinking leading to evil behavior,[77] like when the Apostle Paul complains about himself: "I do not understand my own actions. For I do not do what I want, but I do the very thing I hate" (Romans 7:15).

Information based inter-networks, correlatively connected by the behavior of chaos and complexity, describe a critical sensitivity of eco-system in the sense of togetherness. Because of having the quality of order in information, Barbour remarks by referring to Stuart Kauffman's idea that "*order emerges spontaneously* in complex systems, especially on the border between order and chaos. Too much order makes change impossible; too much chaos makes continuity

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[75] Bonting, *Creation and Double Chaos*, 110-114.
[76] Barbour, *Nature, Human Nature and God*, 18.
[77] Bonting, *Creation and Double Chaos*, 101, 136-137.

impossible."[78] Regarding information and systems, Stephen Hawking states that the twenty-first century is the age of complexity, which as a system includes the following properties.[79]

1. Complex systems contain many constituents interacting nonlinearly. . . .
2. The constituents of a complex systems are interdependent. . . .
3. A complex system possesses a structure spanning several scales. . . .
4. A complex system is capable of emerging behavior. . . .
5. Complexity involves an interplay between chaos and non-chaos. . . .
6. Complexity involves an interplay between cooperation and competition.[80]

In addition, the domain of Natural Science is constructed on what and how scientists believe via their methods. Theories are imaginatively created according to models and paradigms built out of their speculative and empirical findings. Indeed, models play an analogical role, contribute to the extension of theories, and provide mental images. On the role of models, they build structures and systems on the process of paradigms—which is also changing. For instance, the mental models, structures, and systems of Medieval Science and the Newtonian Age of Science in the seventeenth century have changed into Einsteinian Science of the twentieth century. The former stands for static and fixed mechanism with/in a closed system while the latter views the world as a living, moving organism with/in critically open system.[81]

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[78] Barbour, *Nature, Human Nature and God*, 17-18.

[79] Ashutosh Jogalekar, "Stephen Hawking's Advice for Twenty-First Century Grads: Embrace Complexity," *The Curious Wavefunction* (blog), *Scientific American*, April 23, 2013, https://blogs.scientificamerican.com/the-curious-wavefunction/stephen-hawkings-advice-for-twenty-first-century-grads-embrace-complexity/.

[80] Michel Baranger, "Chaos, Complexity, and Entropy: A Physics Talk for Non-Physicists," New England Complex Systems Institute, April, 2000, 10-11, https://necsi.edu/chaos-complexity-and-entropy.

[81] Barbour, *Religion and Science*, 3-72, 115-118, 282-183.

Changing Views of Nature

	Medieval	Newtonian	Twentieth Century
1.	Fixed order	Change as rearrangement	Evolutionary, historical, emergent
2.	Teleological	Deterministic	Law and chance, structure and openness
3.	Substantive	Atomistic	Relational, ecological, interdependent
4.	Hierarchical, anthropocentric	Reductionistic	Systems and wholes, organismic
5.	Dualistic (spirit/matter)	Dualistic (mind/body)	Multi-leveled
6.	Kingdom	Machine	Community[82]

In the contemporary scientific worldview, four remarkable concepts are most notable for understanding cosmological and biological evolution.

1. Self-Organization

In the behavior of complex systems, the different constituted systems such as molecules, cells, neural networks, ecosystems, and technological and economic systems, with/in organisms and nonlinear interactions, cooperate in larger wholes, and express emergent *systemic* properties. Thus, self-organization occurs with/in the process.[83]

2. Indeterminacy

As many mutations and replication errors occur at minute genetic levels, many genetic changes can occur due to both competitive or cooperative interactions of co-evolving species. Similarly, a small number of atomic changes at the quantum level in chaotic systems can be led to larger effects. This called "the butterfly effect," named after the premise that the momentary flapping of a butterfly's wings in Brazil can grow exponentially to the point of affecting a storm system in New York. It is known that

[82] Barbour, Religion and Science, 282.
[83] Barbour, *Nature, Human Nature, and God*, 16-18.

indeterminacy, as well as unpredictability (with many probabilities) exists in an open and chaotic organic system.[84]

3. Top-Down Causality

Living organisms display a multi-layered hierarchy of systems and subsystems. Each layer is a component which is relatively integrated, stable, and self-regulating although each interacts lower and higher layers. Hierarchy is, structurally, described according to particles, atoms, molecules, macromolecules, organelles, cells, organs, organisms, and ecosystems. Functionally, there is a reproductive hierarchy—genome, organism, and population—and a neural hierarchy—molecule, synapse, neuron, neural network, and the brain and its changing interconnections. Human beings are the best example because they demonstrate the highest degree of emergence across social and cultural interactions in the hierarchical systems of sub-systems.[85]

4. The Communication of Information

No order or pattern arises when there is a loss of information because information functions with/in communication which is rife with interpretations and responses, and it is effective with/in active and action-oriented processes. The communication of information, in an organic sense, can be viewed symbolically, verbally, physically, and culturally. Indeed, it is conceived as being dynamical and relational.[86]

In the conclusion of this section, information is the key player for Natural Science, such as physics, biology, and their related fields. It functions with/in the role of inter-relations or inter-actions in physical and biological organisms, from the micro-level to the macro-level. Because of

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[84] Barbour, *Nature, Human Nature, and God*, 18-19.
[85] Barbour, *Nature, Human Nature, and God*, 20-23.
[86] Barbour, *Nature, Human Nature, and God*, 23-25.

its functional role, entities are emerging with the characteristics of softness and hardness, largeness and smallness, yellowness and blueness, liquidity and solidity, and so on. *Nothing is possible without information*. In comparison to the section of continuing creation explained according to process philosophical theology, information is similar to relational prehension which is composed of feelings—both negative and positive with/in the both animate and inanimate in the web of creativity. Indeed, all living and non-living creatures exist in interactive communication of information in each respective degree.

E. Summary and Evaluation

In this summary and evaluation section, I go on to compare a theology of continuing creation in process thought with the works of the pioneering and prominent scholars in religion and science who have constructed theologies of continuing creation in contemporary science. Specifically, I am interested in the work(s) of John Polkinghorne, Arthur Peacocke, Sjoerd L. Bonting, and Ian G. Barbour. I explore their strengths and weaknesses followed by giving my own critical arguments and responses from the perspective of a process philosophical theology of continuing creation. Finally, I will discuss how process philosophical theology and contemporary science are mutually consistent.

1. Arguments for Some Connected Works of Creation between Christianity and Natural Science

John Polkinghorne, a theoretical physicist, Anglican priest, and theologian, constructed a theology of continuing creation based on quantum field theory in his book—a *Science and Creation: The Search for Understanding*. Specifically, he states that the "quantum vacuum is a hive of activity, full of fluctuations, random coming-to-be and fading-away…. but there is a continual chaos…such a fluctuation was the actual origin of our universe. In a Christian

understanding, that provision would be the continuing act of the Creator."[87] Interestingly highlights process theology when he constructs his theology of continuing creation, but he does not give any explanation about it in his work. Indeed, the way he describes above for continuing creation via quantum field theory is arguably identical with process philosophical theology's notion of creativity—a processual nexus from which entities are constantly becoming and ceasing. The quantum vacuum is full of fluctuating vacuum energy is comparable to Whitehead's creativity, which is the ultimate principle of process thought—the One and the Many, or the interconnected complex nexus of whole and parts, or the Uni-multiverse as shown in contemporary cosmic evolution. I would argue that Polkinghorne does not adequately explain the process or continuation of creation in his theology merging Christianity and Science. However, there are weaknesses with Polkinghorne's explanation of God and his/her relationship to the world; specifically, it is far too vague when compared to Whitehead's dipolar God who is an actual entity living with/in the world.

Arthur Peacocke, a biochemist and theologian, developed a panentheistic theology of continuing creation in his 1993 book—*Theology for a Scientific Age: Being and Becoming—Natural, Divine, and Human*. By the concept of "interaction" between the world and human beings, he accepts the concept of emergence and describes the divine becoming of human beings.[88] Together with the interactively evolving life mentioned above, his concept of divine human beings is as acceptable as Whitehead's expression of the condition of subject and superject coming out of interactive feelings or prehensions. His theological position of transcendence in immanence (vice versa) for the relationship of God and the World is

[87] Polkinghorne, *Science and Creation*, 72-73.
[88] Peacocke, *Theology for a Scientific Age*, 177-187.

comparable to the transcendently immanent and immanently transcendent God seen in process philosophical theology. What is lacking, however, is an explanation of the relationship between the concepts how continuing creation and creator.

Sjeord L. Bonting, a biochemist and theologian, also passionately constructs a theology of continuing creation which depends on chaos theory in his 2005 book—*Creation and Double Chaos: Science and Theology in Discussion*. He interprets continuing creation by giving a detailed illustration of cosmic and biological evolution which are easily conceivable when being compared to process thought—the processual becoming of actual entities in creativity. Although he criticizes process theology by pointing out Teilhard de Chardin, I would argue that he could find a strong meeting point if he were to go into discussion with Whitehead's thought.

In comparison to a process philosophical theology of continuing creation, many similarities and strong points are found in their theologies of continuing creation, but there are still weak points. For instance, the process God is clearly described as a co-suffer and a co-creator while Polkinghorne, and Bonting only use the term "creator" so it is more likely that their theologies constructed on the traditional Christian concept of God. Peacocke, as the father of Panentheism, also expresses a panentheistic sense of God by using co-creator; however, it is also unsatisfactory because his explanations are couched in Western and Christian modes of thought. Given their limited relations between Christianity and Science, it is questionable about *how* panentheistic God's transcendence in immanence (and vice versa) can be conceived, especially for other religious traditions like Theravada Buddhism which holds that mind is the ground of all and scientific. They construct their theologies by mostly focusing through the method of comparison between Christianity and Natural Science, but not Whitehead's method of inter-relationality. It is Philip Clayton who, following Peacocke, extends and explains emergent

panentheism by looking from neuroscience to discern that divine agency occurs due to *qualia* with/in a nested interactive hierarchy.[89] His theological concept draws upon with process-relational panentheism such that it might be conceivable as *Nibbana* for Theravada Buddhism—an interdependent co-arising state of mind.

I also use the method of comparison but go beyond it by using the organically relational method of Whitehead in recognizing and respecting the respective boundaries and identities of Eastern and Western traditions. The strong point of process thought is "relational quality" which enables going beyond while building a bridge between East and West. Through the quality of inter-relationality, a theology of continuing creation, contemporary science, and Theravada Buddhism are consistent.

2. Consistency Between Process Thought and Natural Science on Continuing Creation

Whitehead's concept of creativity and evolution in science are like two sides of the same coin—it is not twoness but neither is it oneness. They share some common ground with different names and terms. There is even a certain degree of similarity in their methodologies: Whitehead used the method of speculation and science organizes and uses hypotheses, laws, theories, models, and paradigms. Indeed, contemporary science follows the method of reduction by interconnecting them in deeper levels. Whitehead's creativity as the ultimate law of One and Many is an interconnected complex nexus which is full of potentialities and possibilities, together with; eternal objects; objective immortalities; the functions of feelings/prehensions (positive and negative) with the characteristics of dipolarity; a non-linear, endless, and open process for becoming actual entities from micro- to macro-layers; self-formation; divine and

[89] Clayton, *Adventures in the Spirit*, 186-203.

dynamic agents/persons emerging out of an interactive hierarchy; the constituted systemic organism or organisms; and so on. Likewise, evolution in science illustrates: Uni-multiverse; the interactive vacuum energy ($E=mc^2$); the quantum fluctuation; the complementarity of wave-particle duality; chaos and complexity; the co-evolving process of the cosmos and bios; an interconnected net (of laws, gene formations, neurons, and so on); a systemic society of societies; communicative information; top-down causality; indeterminacy; self-organization; and so on.

Theologically speaking, the interconnection between Whitehead's metaphysics and natural science are like the relationship of a parent and child—without having a child, there is no parent and vice versa. In other words, Whitehead's metaphysics would be untenable without contemporary science, especially Einsteinian theoretical physics and Darwinian biology. Due to their relational supportiveness, they become more meaningful between each other. The difficult philosophical terms and concept of Whitehead's creativity are easily understandable through the words and theories of science. For instance, science is grounded on Energy ($E=mc^2$) which is expressed as the interconnection of four fundamental forces in evolution and used in the further theoretical and experimental works of it. Thus, Whitehead's metaphysics and contemporary science provide a complementary and consistent ground for developing a theology of continuing creation.

3. A Response to the Critique of Process Thought

Mathematician and theologian Ian G. Barbour highlights continuing creation by recommending process thought in his book *Religion and Science: Historical and Contemporary Issues,* though he does point out its weaknesses, such as Christianity and metaphysics, God's

transcendence and power, and the criteria for theological reformulation.[90] I argue that these weaknesses are, in some ways, chances or potentialities to become in openness due to the relational qualities in Whitehead. For instance, no light is brighter in day time but in the darkness. If the weak points are seen as the dark, then they function supportive potentials. Because of the quality of connections, many things can be possible from the so-called weak points. It is known that Whitehead's God is different from traditional Christian concept of God because there are also open places to other different religions and non-religions. Moreover, this "God" is also not locked in the Christian box or boundary but reaches beyond it by standing on "relations" or "interactions." Thus, there is no separation between the secular and sacred; rather, they exist with/in an organic co-relationality. Because of this, religion and metaphysic are profoundly related to one another and become mutually meaningful. Unlike the traditional Christian or broadly Western concept of the power of God, process God's power is a co-relational power with/in which there is no transcendence without immanence and vice versa. The criteria of theological reformulation do not depend on one's perspective, especially a Western perspective, but is open and interdepend on the relationship of differences. To a certain extent, those are concrete while in a certain sense, there is still openness for being concreteness because it is openly processual.

F. Transition from Natural Science to Theravada Buddhism

In an organic relationality of the three different domains of Christianity, Natural Science, and Theravada Buddhism, this section again opens the bridge between Natural Science and Theravada Buddhism. It has been illustrated that cosmic evolution, including the evolution of

[90] Barbour, *Religion and Science*, 325-328.

life, persuades us to go forward to a different systemic boundary of Theravada Buddhism. Relating to the section, a relational bridge is built by the following belief and words attributed to Albert Einstein:

> The religion of the future will be a cosmic religion, a religion which is based on experience, which refuses dogmatism. If there's any religion that would cope with modern scientific needs it will be Buddhism. Buddhism has the characteristics of what would be expected in the cosmic religion for the future, it transcends a personal God, avoids dogma and theology; it covers both the natural and the spiritual, and it is based on the religious sense aspiring from the experience of all things, natural and spiritual, as a meaningful unity.[91]

As Einstein declares, a Theravada Burmese Buddhist scholar U Mya Than also describes "Buddhism [as] a unique system of science, a unique system of philosophy, and a way of life."[92]

Particularly, there is a comparison between the work of Natural Science and Theravada Buddhism. In comparison, Ankur Barua takes the Buddhist *inter*dependent origination or *paticcasamuppada,* which is the nature of reality, as natural law or the ultimate truth with Einstein's relativity. Connected to Einstein discovery the "Law of the Photoelectric Effect" in 1905 and 1915, his concept of special relativity describes that light is a wave and particle duality, and the famous interconnectedness $E=mc^2$ equation[93] and theory of general relativity[94] are

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[91] "Einstein on Reality, Buddhism," Chenrezig Project, accessed January 28, 2021, http://www.chenrezigproject.org/wordpress1/dharmanotes/einsteinbuddhism.pdf.

[92] U Mya Than is an ambassador/permanent representative of Myanmar at the international exhibition of Buddha's Relics. This speech was delivered on March 1, 2003 at Geneva. In the author's possession.

[93] Ankur Brua remarks that it means "the energy content of a body is equal to the mass of the body times the speed of light in [a] vacuum squared. This equation predicted an evolution of energy roughly a million times more efficient than that obtained by ordinary physiochemical means. This led to the theory of the conservation of energy, in the form of the first law of thermodynamics, which stated that the total amount of energy in any isolate system always remains constant. Although it can only be changed from one form to another, this energy cannot be created or destroyed." Ankur Barua, "Dependent Origination and Relativity," (The University of Hong Kong, Hong Kong: The Center of Buddhist Studies, October 21, 2009): 1-9, accessed, January 29, 2021, http://introductiontoappliedbuddhism.blogspot.com/2009/10/dependent-origination-and-relativity.html.

[94] Ankur Barua notes that this theory shows "matter and energy actually mold the shape of the space and the flow of time. What we feel as the 'force' of gravity is simply the sensation of following the shortest path we can through curved, four-dimensional space-time. It was a radical vision where space was no longer considered to be the box to enclose the universe. instead space and time along with matter and energy are locked together in the most intimate embrace." Barua, "Dependent Origination and Relativity"

compared to the Buddhist conception of a dynamic, oscillating dynamic flux where is constituted events as space-time representation. Nothing is isolated but exists as an interconnected series of organisms. Everything is transforming in the process of arising and vanishing. Einstein does not conceive of the world as a "creation" of "creator" God who metes out punishment and rewards to his creatures; similarly, Buddhism, by transcending wisdom or reaching enlightenment, observes with/in the world the law of *paticcasamuppada* with the concept of impermanence. What is more, just as Einstein sees time as illusory with irreversibility (i.e. there is an asymmetry between past and future), so too Buddhism, by analyzing the existence of time, realizes that it is a conventional truth which is associated with the experiences of past, present, and future—viz. psychological time. Space (or empty space), what physicists says is full of infinite vacuum energy which enables the evolution in the universe, is comparable to *Nibbana* due to the interdependence of *kamma* or causal energy. It has been observed that interdependence or interrelatedness is the nature of reality. Scientists hold, by observing the increasing red-shift, the presence of numbers of galaxies; likewise, Buddhism has long conceptualized the co-existence of multiple-solar systems in the cosmos due to the principles of impermanence and causality—a spirally continuing process of forming-existing-ceasing.[95]

Uniquely, Natural Science itself also has the quality of relationality—the medium ground of connections. Indeed, it is boundaryless that it connects to other boundaries regardless of faith and religions. In other words, it can, by standing on its own position, relate to process thought as well as Theravada Buddhism.

I, therefore, will build another theological bridge for continuing creation between Natural Science and Theravada Buddhism. I will do this because of the interactive and comparative

[95] Barua, "Dependent Origination and Relativity,"

grounds of their knowledge and works. I will begin by discussing the concept of continuing creation in Theravada Buddhism. It also gives a differently unique domain for enrichment between each other through inter-relationality.

CHAPTER FIVE

THE BUDDHIST NOTION OF CONTINUING CREATION

Theravada Buddhism does not have the concept of creation, unlike the traditional Christian concepts of creator and creation; however, there is the idea of continuing creation. Buddhists conceive that all sentient and non-sentient beings are co-arising or becoming as well as perishing from a condition and its causal relations in nature. This Buddhist concept is similar to a theology of continuing creation as discussed within process thought and natural science.

In what follows, through the quality of process relationality, I will describe the Theravada Buddhist concept of continuing creation as the last domain of the three different boundaries of Christianity, Natural Science, and Theravada Buddhism. To have clear knowledge about the Theravada Buddhist notion of co-arising, it is necessary to learn Theravada *Abhidhamma* which shows in detail how things are co-arising. As such, I will give a brief introduction to *Abhidhamma* philosophy, *Paticcasamuppada*, the law of *Kamma*, as well as *Nibbana* and *Samsara*. I will then conclude with an evaluation vis-à-vis the other two domains.

A. What is *Abhidhamma* Philosophy?

Theravada Buddhism holds the *Tipitaka* (*Pali*) to be the great Buddhist Collection which is to be learned, taught, and followed in daily life. The *Tipitaka* is composed of three types of teachings. First is *Sutta pitaka,* or conventional teaching (i.e. *vohara dasana*). This is the Buddha's preaching about ethics as related to human persons' questioning and answering regarding what should or should not be done regarding natural laws. Second is *Vinaya pitaka* or authoritative teaching (i.e *Ana-desana*). This is about Buddha the exercising authority and laying

down rules and disciplines for the monks to be ethical, noble, and respectful through action, speech, and thought. Third is *Abhidhamma pitaka,* or the higher teaching of the Buddha. This is the ultimate teaching of the Buddha, or *paramattha desana,* which describes both the ultimate realities in the Universe and *Nibbana,* the highest goal and *summum bonum* of Buddhism. In comparison, *sutta pitaka* is concerned with ethical teachings for daily life by describing the important characteristics of human beings while the *Abhidhamma* uniquely explains the essence of ultimate realities as well as what and how the realities, or *paramattha desana,* are arising.[1] Note that the texts of the other Buddhist denominations, like Mahayana Buddhism, are taken from the *Dhammsangani* Canon.[2]

The main teaching text of Theravada Buddhism is the *Abhidhamma*. In looking to the *Pali* comprised word *Abhidhamma*, *Abhi* means "'marvelous or excellent or enormous'; and *Dhamma* means 'teaching of Buddha or preaching about the laws of nature'."[3] Interestingly, Theravada Buddhists call *Abhidhamma* the Ultimate Science because they assert that it empirically analyzes mind and matter on a minute level. In other words, it describes both mental and physical sciences. It is also called a psycho-ethical-philosophy because philosophy is understood as a noble or divine science which shows the science of the Ultimate Truths. Systematically, it describes the intrinsic nature(s) of ultimate realities comprising impermanent mind *and* matter *as well as* the permanent peace of *Nibbana*[4]—a state of being free from both mind and matter which is the attainment of ceasing from suffering. Uniquely, *Abhidhamma*

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[1] Nandamarlarbhiwunsa, "*Abhidhamma*,"

[2] Nyanaponika Thera, *Abhidhamma Studies*: Buddhist Explorations of Consciousness and Time, 4th ed. (Boston, MA: Wisdom Publications, 1998), ix-xii.

[3] Mon, *The Essence of Buddha Abhidhamma*,10.

[4] I have italicized both "and" and the phrase "as well as" in order to illustrate the importance of the interconnections between these natures when reading and realizing *Abhidhamma*.

philosophy analyses and describes the characteristics and functions of the mind in detail, holding the mind to be the most powerful agent of the world because of how it reveals that all philosophies and sciences in the world are produced by the mind. The mind is the most powerful inner force. Indeed, it investigates natural laws or truths as well as natural processes which deal with matter and energy. *Abhidhamma* is thus scientific as well as artistic, and it copes with various dimensions such as—neuroscience, psychology, physics, chemistry, biology, geology, geography, electronics, engineering, ethics, religion and so on.[5] As such, *Abhidhamma* is a special intellectual bowl from which scientists, philosophers, psychologists, and truth-seekers find the ultimate wisdom and knowledge taught by the Fully Enlightened One, the Buddha, in order to become similarly enlightened.

So, the subject matter of *Abhidhamma* is the interdependent organization of systems, societies, and series of ultimate realities and conventional realities, as well as ultimate truths and conventional truths. According to the systematic instruction for learning the systemic structures of *Abhidhamma*, the interrelated systemic and organic societies of conventional realities *and* ultimate realities[6] will now be described, followed by the alternative systems of conventional truths *and* ultimate truths.

1. Conventional Realities or *Pannattis*

Conventional realities are concepts, or *Pannattis*. Mehm Tin Mon states that "all living beings, inanimate things, and the names given to them are conventional realities. The beings and the things seem to really exist according to our sense perception."[7] As they are visible and

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[5] Mon, *The Essence of Buddha Abhidhamma*, 4-6, 18-19.

[6] When considering conventional realities and ultimate realities, conventional realities come first because they directly relate with daily and present experiences and are thus easily conceived. Ultimate realities naturally follow in the Buddha's teaching. The conjunction "and" between them is crucial because it shows "*interconnection*."

[7] Mon, *The Essence of Buddha Abhidhamma*, 21.

touchable, they are given names in daily communication or conversation. For instance, they are "woman," "she," "cat," "dog," "table," "Mark Zuckerberg," "Donald J. Trump," and so on. Despite feeling that they really exist, these objects do not exist by their own identities or intrinsic natures because they are reducible and changeable realities. Indeed, their mode of being is conceptual rather than actual because they are the products of mental construction. When examined analytically, they disappear. For instance, "table" is not a reality and does not really exist because it is a composed of pieces of wood, glue, and nails which are themselves aggregates of cells, molecules, atoms, and ultimately strings. Once dismantled, the table disappears.[8]

Here is an interesting episode in the Buddhist chronicles between two wise persons—King Milinda and the arahant Ven. Nagasena:

> The King asked, "By what name shall I know you, sir?"
> Ven. Nagasena answered, "My companions call me Nagasena. But the name and the person whom the name refers to do no really exist."
> The King commented, "If Nagasena and the person do not exist, to whom do people offer alms and who receive these offerings? Since you receive them, you really exist. Why did you tell a lie in spite of your higher nobility?"
> Ven. Nagasena enquired, "Your Majesty, did you come to this monastery on foot or by chariot?"
> The king replied, "I came by chariot."
> Ven. Nagasena enquired further, "Well then, please show me your chariot? Is the horse the chariot? Is the wheel the chariot? Is the axle the chariot? Is the carriage the chariot?"
> The King answered "No" to all these questions
> Ven. Nagasena remarked, "Is there a chariot beside the horse, the wheel, the axle, the carriage, etc.?"
> The King again said "No."
> Ven. Nagasena commented, "Your Majesty, you said you came here by chariot; yet you could not show me the chariot! Why did you tell a lie in spite of your high honour?"
> The King consented, "There is no chariot beside the horse, the wheels, the axle, and the carriage. just a combination of these things has been named the chariot."

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[8] Nandamarlarbhiwunsa, "*Abhidhamma*,"

> Ven. Nagasena remarked, "Very well, Yhour Majesty, you should understand Nagasena as you understood the chariot."[9]

2. Ultimate Realities or *Paramatthas*

Ultimate realities, or *Paramatthas*, really exist. They are connected but in contrast to conventional realities. The *Pali* word *parama* means "ultimate" or "final," and *attha* means "reality." By reasoning to all living beings and inanimate things, ultimate realities have their own intrinsic nature. These are *dhammas*, the final irreducible components of existence. An ultimate reality exists by its nature and holds its characteristics until it vanishes, neither changing into simpler things nor dividing into other things, being neither created nor destroyed. These can be known, felt, and sensed. There are four organically constituted societies of ultimate realities: i) Consciousness (*Citta*); ii) Mental Factor or (*Cetasikas*); iii) Materiality or (*Rup*a); and iv) *Nibbana* or (eternal peace and bliss).[10]

3. Conventional Truth or *Samuti-sacca*

Connected to the conventional and ultimate realities mentioned above, there are conventional truths, or (*samuti-sacca*) *and* ultimate truths. Conventional truths exist in terms of conventional realities. As expressions and speech using the names of living beings and inanimate things are conventionally recognized and accepted, these are conventional truths because of the intention of truth. For instance, although there are only electrons, protons, neutrons and energy in the ultimate sense, no one denies or neglects the existence of atoms and molecules formed by the

[9] Mon, *The Essence of Buddha Abhidhamma*, 22. The italic *and* is intended to conceive the relatedness between them.

[10] Mon, *The Essence of Buddha Abhidhamma*, 23.

combinations of sub-atomic particles, or the existence of cells, organs, living beings and inanimate things formed by the combination of atoms and molecules.[11]

4. Ultimate Truth or *Paramattha-sacca*

While conventional realities do not exist in any ultimate sense, ultimate realities do not exist in the ultimate sense such that speech in terms of ultimate realities is what is known as ultimate truth. According to ultimate truth, only consciousness, mental factors, and materiality truly exist in the whole universe. Indeed, any principle and natural law which always remains true on account of time and occasion is called ultimate truth. The Buddha teaches four natural laws which deal with natural phenomena as ultimate truths i) the Law of Consciousness, or *Citta-niyama*; ii) the Law of *Kamma,* or *Kamma-niyama*; iii) the Law of *inter*dependent *co*-origination or *Paticcasamuppada*; and iv) the Four Noble Truths, or *Ariya-saccas*.[12]

In summary, *Abhidhamma* is about "how life is" discerned and observed by Theravada Buddhists. It is mainly comprised of the co-related systemic series and societies of the ultimate realities *and* conventional realities, as well as the co-related systemic and natural laws of the ultimate truths *and* conventional truths. These realities show the idea of "interdependence" of two poles as well as organically interdependent web-systems to be necessarily meaningful and supportive betwixt, between, and among each other. These systemic co-relationalities are systematic, empirical, and analytical. *Abhidhamma* deals with multiple dimensions of religion, philosophy, science, ethics, politics, education, economics, and so on. When studying systematically, Theravada Buddhists describes the conventional realities first because they are

[11] Mon, *The Essence of Buddha Abhidhamma*, 24.

[12] Mon, *The Essence of Buddha Abhidhamma*, 25-26. I will offer a detailed explanation of these in the following section.

daily experiences for human beings, thus easily conceivable. Based on the *Abhidhamma*, the law of *paticcassamupada* is offered next to explain the Theravada Buddhist concept of continuing creation.

B. The Law of *Paticcasamuppada* or Interdependent Co-Arising

The Law of *Paticcasamuppada* is one of the ultimate truths in *Abhidhamma*. Through this law, the Buddha discerns the nature—animate and inanimate beings including human beings, which the reason why I choose to describe this law. Through the wisdom of this universal law, Buddhists see all sentient and non-sentient beings in the world, and becomes enlightened.

This ultimate principle of *Paticcasamuppada* is the combination of three *Pali* words: *Paticca*, which means "'because of' and '*inter*dependent upon'; *Sam*, which means 'well'";[13] and, *Uppada* which means "arising through interdependence upon causal entities."[14] Saw Hlaing Bwa defines the *Pali* word *Pati* as meaning "'inter-act' or 'inter-actions' *betwixt,* between, with, *with/in*, through, and among entities in sequential and systemic series and societies of events. Hence, *paticcasamuppada* is 'interdependent co-arising or co-origination'."[15] Many scholars and writers, including Buddhists translate this *Pali* combined term *paticcasamuppada* (*Pratityasamutpada* in Sanskrit) to English in various ways: "'dependent origination', 'conditioned co-production', 'causal conditioning', 'causal genesis', 'conditioned genesis',

[13] U Than Daing, *The Doctrine of Paticcasamuppada: The Law of Dependent Origination*, Society for the Propagation of *Vipassana* Mogok Sayadaw's Way (Yangon: Than Htike Yadana Offset, 1996), 10.

[14] Daing, The Doctrine of *Paticcasamuppada*, 10.

[15] Saw Hlaing Bwa, "Process Theology and Buddhism," Class Lecture for M. Th and M.Div, Myanmar Institute of Theology, Yangon, September 2014. Italics are mine. I prefer using this interpretation of "interdependent co-arising or co-origination" for *Paticcasamuppada* because it is more perceptively understandable in learning about *Abhidhamma*.

'causal dependencies'."[16] However, I prefer to use Bwa's interpretation *paticcasamuppada* as interdependent co-arising or co-origination.

I would use the example of lighting a match to illustrate *paticcasamupada*: there is no light or flame on a match, but the possible conditions of potential for lighting— matches and a match-box. When the co-condition of your fingers striking (or touching as well as interacting) a match to the bar of its match box is met, the light and flame are produced. Thus, *paticcasamuppada* is like an interconnected condition of a matted web or ball of thread from which all animate and inanimate beings are simultaneously arising. It is neither the first beginning nor the First Cause, and no one knows the ultimate origin or where and when it began.[17] In the law of interdependent co-arising, the cycle of rebirth is illustrated in alternative ways of causal events in which the causal entities are interactively arising and vanishing in endless processes. U Than Daing remarks that the cause is both the cause and effect. In other words, the cause becomes the effect and the effect, in turn, becomes the cause in the universe of space and time.[18]

The Law of *Paticcasamuppada*, like an interconnected web, is organically constituted by systems and series of societies of ultimate realities and truths. In other words, *Paticcasamuppada* is an interdependent co-condition in which the way of correlating cause(s) and effect(s) arise and perish. Indeed, there are two different orders: *anuloma* (arising or becoming) and *patiloma* (ceasing, vanishing, or perishing). Moreover, interdependent co-arising is a condition as well as a flux of how animate beings and inanimate things arise and vanish including suffering. This

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[16] Piyadassi Thera, "Dependent Origination*: Paticcasamuppada,*" The Wheel Publication No. 15, BPS Online Edition, (Kandy, Sri Lanka: Buddhist Publication Society, 2008): 2 Accessed December 12, 2020, https://www.bps.lk/olib/wh/wh015_Piyadassi_Dependent-Origination.html.

[17] Thera, "Dependent Origination," 3.

[18] Daing, *The Doctrine of Paticcasamuppada*, 11.

un/conditionality goes on forever—it is eternal, open, and independent. No being, power, or agent controls or interrupts it externally. Through the fullness of this law the puzzle of life is solved. In this togetherness of *paticcasamuppada*, each and every factor joins with another series. No factor is singled out or isolated, can stand by itself, or work alone, independent from the rest. All are interdependent and interconnected. *Paticcasamuppada* is an unbroken process where nothing is isolated, fixed, independent, or static. All is in the whirling process of change—arising-existing-perishing according to similar evanescent conditions. All that really exists are bare phenomena, which means that there is neither absolute non-existence nor absolute.[19] In other words, changing is permanent. Piyadassi Thera, by quoting Ud 2, offers an explanation:

> When this exists, that comes to be; with the arising of this, that arises. When this does not exist, that does not come to be; with the cessation of this, that ceases, namely: *inter*dependent on ignorance, arise volitional formations… and so on... Thus, is the ending of this whole mass of suffering.[20]

As *Paticcasamuppada*, there is a correlated system of twelve connections of interdependent factors, composed of twenty-four modes of conditionality for physical and psychological phenomena. It is called the *Patthana* way, or the law of causal relations for the becoming of life. The way of *anuloma* (arising) of *paticcasamuppada* will be first, then the way of *patiloma* (cessation).

i~ii[21] *Avijja-paccaya sankhara* (ignorance-conditioned by-volition)

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[19] Thera, "Dependent Origination," 4, 5-6. Nandamarlarbhiwunsa, "*Abhidhamma*,"

[20] Thera, "Dependent Origination," 4. Italics are mine.

[21] I owe the numbering to Piyadassi Thera, who describes the explanation of twelve connections of interdependent factors by using the pattern of "i-ii," "ii-iii," "iii-iv," and so on. However, I give this numbering pattern a slight change, from "i-ii" to "i~ii" to give the sense of nonlinearity in their causal and correlational relations because these connections are not linear. The title symbolizes the meaning of *Pati* or the "inter"-act of interactions or interdependence of causal entities.

Interdependently conditioned by ignorance, volitional, or mental or *kamma* formations are arising.[22]

In the eternal process of *paticcasamuppada*, *Abhidamma* discusses ignorance—*avijja*—also called delusion (*moha*) and non-knowledge (*annana*), as the first point of the causal link. Indeed, *avijja* is the non-knowledge of Supreme Enlightenment. In other words, it is not knowing about the Four Noble Truths, nor about interdependent co-arising, nor about the way how the four noble truths are or the *dhamma*.[23] One who is ignorant and holds the wrong sight perceives the changing world and worldly things as unchanged because the veil of ignorance covers the mental "eyes" preventing one from seeing the true nature of reality. It makes him/her view and hold "the impermanent as permanent, the painful as pleasurable, the soulless as soul, godless as god, the impure as pure, and the unreal as real."[24] Moreover, ignorance is also the non-perception of the whole gathering the nature of five aggregate societies of mind and body, or *pancakkhandha*. Due to ignorance, delusion, immoral actions and defilements, (*akusala*) occur. All wrong notions are the result of ignorance. Therefore, ignorance is marked as the first connection of the twelvefold interdependent co-arising, but is not a *prima causa*—a first beginning or ultimate origin of all things in the circle of existence where no starting point is found. Since there is no sole condition, ignorance also arises through interdependent conditions with others. By enlightening the sequentially interconnected series of the law of interdependent co-origination, any mental, verbal, or physical evil action can be discerned and overcome.[25]

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[22] Mon, *The Essence of Buddha Abhidhamma*, 236.

[23] The Noble Truths are called *Ariya-saccas*: there are *Dukkha Sacca* or the Noble Truth of Suffering; *Samudaya Sacca,* or the Noble Truth of the Cause of Suffering; *Nirodha Sacca,* or the Noble Truth of the Cessation of Suffering; and *Magga Sacca,* or the Noble Truth of the Path leading to the Cessation of Suffering. Mon, *The Essence of Theravada Abhidhamma*, 234.

[24] Thera, "Dependent Origination," 6.

[25] Thera, "Dependent Origination," 7.

Ignorance makes people unable to see things as they really are. What is more, people crave their delusions. Craving drives people to further acts, too many of which are evil. Without actions conditioned by ignorance, there would be no reactions, no rebirth, and no suffering in the existential period of past, present, and future. Given that ignorance and volitional formations belong to previous births, wholesome *sankhara* can bring blissful existential state of rebirth, just as unwholesome *sankhara* brings evil.[26] For instance, a virtuous *arahat* attains his life through the insightful balancing of detachment and delusion by seeing and discerning evil actions with the qualities of wisdom and knowledge *qua* compassion and virtue. This is subtle and specific. For example, if a person unconsciously holds a hidden feeling of tender longing for an intentional expectation or recognition of good and happy rewards, s/he is still lacking full knowledge because this *kammic* action will lead him/her to a stage of good rebirth or existence. In this way, the cycle of rebirth continues, and the four noble truths also continue. That is why *Ahbhidamma* calls for ignorance of the four noble truths. It is also the intrinsic nature of ignorance. Even celestial birth is temporal: thus, only an *arahat* who has completely eradicated sorrow, by transcending appearances and penetrating deeply into *vipassna,* or insight into life, can be free from *avijja* so that no more rebirths will occur as s/he will fully attain enlightenment, or *vijja*. [27] However, this does not mean that an ignorant and craving person can never be detached and insightful. As the process is not fixed but a neutral condition, everyone can attain this state due to each act of self-determination.

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[26] Thera notes that the term *sankhara* has an appropriate but unsatisfactory English interpretation as rebirth-producing volitional activities, or volitional formations, or contextually as *kamma*. It applies to all compounded and conditioned things, i.e. all things that come into being as the effects of causes and conditions and which themselves act as causes and conditions in turn, giving rise to other effects in *paticcasamuppada.* Thera, "Dependent Origination," 7.

[27] Thera, "Dependent Origination," 7-8.

ii~iii *Sankhara-paccaya Vinnanam* (volitional formations-conditioned by-consciousness)

Interdependently conditioned by volitional formations, consciousness is arising.[28]

This processive condition means rebirth-producing volitional formations which belonged to the previous birth condition interdependently to arise a relinking birth consciousness. In other words, due to one's good or bad *kamma* in the past, re-linking or rebirth consciousness interdependently conditions conscious life for birthing in the present. Consciousness is identified as the first factor which enables conditioning links to cause life, or *bhava,* to arise. Because of being constituted of *avijja* and *sankhara* belonging to the past, this togetherness co-produces *vinnana,* or consciousness, in the present birth or existence.[29] Quoting the *Digha Nikaya*, Piyadassi Thera describes how "once ignorance and craving are destroyed, good and evil in actions no [longer] come into being, consequently no more rebirth consciousness will spring up again in a mother's womb."[30] This is also known as *patisandhi-vinnana* or re-linking consciousness. *Patisandhi* literally means re-linking, re-joining, or re-uniting; it is re-entry into the womb to be re-born, arising, and coming to be in the future. Moreover, it is the function of joining or re-uniting the new to the old of (one) existence with (another) existence to be arising. This is a *kamma* resultant consciousness handed down due to previous rebirth-producing volitional formations (*sankhara or kamma*). It should be noted that this rebirth is due to one's own actions rather than being the work of a supreme creator God nor mere chance.[31]

Furthermore, there is *cuti citta,* or the last moment of consciousness that happens near death which belongs immediately to the next life. The quickest flickering moment of joining the

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[28] Mon, *The Essence of Buddha Abhidhamma*, 239.
[29] Thera, "Dependent Origination," 8.
[30] Thera, "Dependent Origination," 8.
[31] Thera, "Dependent Origination," 8.

last and the first consciousness is *patisandhi-vinnana,* that *patisandhi citta,* or re-linking embryonic consciousness which immediately arises by re-uniting together between them.[32] Consciousness is also impermanently changing within the ongoing process of becoming and vanishing as a way of existence. If consciousness were eradicated, then no sentient being would arise in the world.[33]

iii~iv *Vinnana-paccaya Nama-rupam* (consciousness-conditioned by-mind and matter)

Interdependently conditioned by consciousness, mentality-materiality (mind *and* matter) is arising.[34]

This non-linearly interrelated process means that by interdepending on consciousness, mentality-physicality arises. Thera describes this interconnected processive condition, stating that "*inter*dependent on consciousness arise the three mental concomitants (feeling, perception, and volitional formations) that compose mentality, along with the co-nascent [sic] material body in its first embryonic stage."[35] With the three constituted mental sets and societies (*vedanakkhanda*, *sannakkhanda*, and *sankharakkhandha*), the term *nama* stands in the whole here for the position of *cetasika* mental states. *Tatta* in *Pali* (*tattva* in Sanskrit), refers to the sentient beings and these beings are composed of *pancakkhandha,* or five aggregates of *rupa* (a physical body), *vedana* (feeling), *sanna* (perception), *sankhara* (volitional formations), and *vinnana,*(consciousness). In the interdependence of mentality-materiality, consciousness is understood as mind: on one hand, the concomitants of mind, feeling, perception, and volitional

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[32] Mon, *The Essence of Buddha Abhidhamma*, 103.

[33] Thera, "Dependent Origination," 9.

[34] Mon, *The Essence of Buddha Abhidhamma*, 240. This *Pali* to English translation and interpretation for the process series of an interdependent co-arising natural system, taken from Mehn Tin Mon, will be used continuously for the rest of the series which I will continue to discuss.

[35] Thera, "Dependent Origination," 10. Italics are mine.

formations are sequentially followed; on the other hand, materiality, along with first co-nascent embryonic material stage as the physical body with its organs, faculties, and functions, simultaneously arises. Together with the functions of the inseparable interrelatedness of *citta-cetasika*, no consciousness can arise and function separately from its factors, nor can the factors arise and function without consciousness.[36] They co-arise as well as co-vanish in their interdependent and processive relationality.

iv~v *Nama-rupa-paccaya Salayatanam* (mentality-materiality-conditioned by-the sixfold base)

Interdependently conditioned by mentality-materiality, the sixfold sense base is arising.[37]

In this related co-condition of mentality-materiality, the sixfold base arises. The sixfold base is composed of the five physical sense organs, namely the eyes, ears, nose, tongue, and body; and the mind, or *manayatana,* the collective society of various sense consciousness and numerous societies of mind consciousness.[38] The five sense bases are for physical phenomena, for seeing, hearing, smelling, tasting, and touching, and the sixth sense base is similar to consciousness, the third causal relation of *vinnana* which is a complexly varied and qualitatively functional condition of possibilities.[39] Given the reality of impermanence, speedy changes of old consciousness disappearing and new consciousness appearing occur in two consecutive moments, like lightning flashing in the sky, followed by pealing thunder. However, unless there is the interconnected condition of mentality-materiality, or *nama-rupa*, the sixfold sense no longer arises.[40]

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[36] Thera, "Dependent Origination," 10.
[37] Daing, *The Doctrine of Paticcasamuppa*, 10-11.
[38] Thera, "Dependent Origination," 10.
[39] Mon, *The Essence of Buddha Abhidhamma*, 100-104.
[40] Thera, "Dependent Origination," 10.

v~vi *Salayatana-paccaya Phasso* (sixfold sense base-conditioned by-contact)

Interdependently conditioned by the sixfold sense base, contact is arising.

Due to the interconnected condition of the sixfold sense base, another interrelated process "contact" appears. Correlating to the sixfold senses bases, there are external sense objects—form, sound, smell, taste, tactile, and mental objects. Connectedly, external objects are the nutrition for internal ones. Due to the interacting relationship between the six sense organs and objects, awareness arises with consciousness, or *vinnana*, respectively—visual consciousness out of the presence of eye and form, auditory consciousness out of the presence of ear and sound, mental consciousness out of the presence of mind and mental objects such as ideas, propositions, hypothesis, and so on. Moreover, the co-incidence of the three, namely eyes, forms, and eye-consciousness, joined together is called "contact or impression," or *phassa*. Contact/impression is thus correlatedly conditioned by the internal sixfold base (or *ajjhattika-ayatna*) and the external sixfold base (*bahira-ayatana*).[41] It should be noted that

> "i*nter*dependent on the sixfold base arises contact or impression," means: The visual contact conditioned by the eye; the sound contact conditioned by the ear; the smell contact conditioned by the nose; the taste contact conditioned by the tongue; the bodily contact conditioned by the body; the mental contact conditioned by the mind.[42]

If there are no sense objects, no sense impression arises, and if there is no sixfold base consciousness, no mental impression appears. Because of the impression, feeling arises.

vi~vii *Phassa-paccaya Vedana* (contact-conditioned by-feeling)

Interdependently conditioned by contact or impression, feeling is arising.

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[41] Thera, "Dependent Origination," 10.
[42] Thera, "Dependent Origination," 10.

Along with the sixfold sense base, sixfold feeling arises, such as visual feelings, sound feelings, smell feelings, taste feelings, tactile feelings, and mental feelings. They may be pleasurable (*sukka*) painful (*dukka*) and neutral (*uppekka*, viz. neither *sukka* nor *dukka*) due to the past from which it rebirths, good or bad feeling results. The unresistingly simultaneous feeling (*vedana*) arises on account of contact (*phassa*) between three joint events, such as between eye, form, and visual consciousness, in a particular sense base. Feeling is unstoppable by force or external power because it is natural.[43] Although feeling is experienced by "seeing a form, hearing a sound, smelling an odor, tasting a flavor, touching some tangible thing, and cognizing a mental object or idea,"[44] the feelings experienced by various sentient beings will be diverse for the same object. For instance, a doll may be seen as beautiful and lovely by one, ugly and disgusting by another, and neutral by still another. According to the conditions, circumstances and backgrounds of those having the experiences, feelings will be varied. As a result, a bad feeling at one time may be pleasant for a different person, condition, and time.[45]

vii~viii *Venada-paccaya Tanha* (feeling-conditioned by-craving)

Interdependently conditioned by feeling, craving is arising.

Feeling (*tanha*), the source and genesis of craving, is what the Buddha calls the leader to becoming (*bhava-neti*). All kinds of appetite—such as greed, thirst, yearning, longing, lust, desire, affection, burning, and including household love—lead to a life which is full of suffering and painful experiences from the evils that come from this craving or lust.[46] Since craving takes root in all sensually pleasurable and pleasant entities of form, sound, taste, touch, and thought,

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[43] Thera, "Dependent Origination," 11.
[44] Thera, "Dependent Origination," 11.
[45] Nandamarlarbhiwunsa, "*Abhidhamma.*"
[46] Thera, "Dependent Origination," 11-12.

there is a (re)-becoming or rebirth by joining action-oriented feeling (*kamma*-tanha) craving for sensual pleasure, craving for continued existence (*bhava-tanha*) and craving for self-annihilation or non-existence (*vibhava-tanha*). These three sorts of craving (*tanha*) enumerate the noble truths of interactions of suffering *samudaya-sacca,* or the noble truths of the cause of suffering, and interrelatedly represent the greed-rooted consciousness, (*lobha-mula citta*) of immorality consciousness (*akusala cittas*).[47] Moreover, when sensuous craving is connected to the belief in eternal personal existence, it turns to a craving for continued existence which is known as *sassata-dithti* (e.g. "externalism"), and when it joins with the belief in self-annihilation at death, it turns to craving for self-annihilation which is called *uccheda-dithti* (e.g. "nihilism"). Even when obstructed, craving can change into anger, frustration, sadness, fear, and so on. Craving happens in various and numerous levels of sentient beings including both rich and poor. For instance, the rich and the healthy who have long experienced pleasure crave for more and more pleasure at the same time that the poor and the needy crave happiness, security, and solace. Craving is unrest in that the more one craves, the more one suffers.[48]

viii~ix *Tanha-paccaya Upadanam* (craving-conditioned by-clinging)

Interdependently conditioned by craving, clinging is arising.

The processive and constituted condition of feeling enables clinging arise. *Upadana* can be defined as "grasping," "clinging," or "attachment." Clinging is a high level of craving in the mental state of human beings, in which one becomes a slave to passion, the net of pleasure made by him or her for himself or herself. There are four connected parts of *upadana*:

a. *Kama-upadana,* or attachment to sensuous pleasure or sense desires

[47] Mon, *The Essence of Buddha Abhidhamma*, 243-234.
[48] Thera, "Dependent Origination," 12.

Kama here covers both craving and craved objects, or *kilesa-kama and vatthu-kama*. As feeling (*tahna*) is slightly weaker than *kama-upadana*, clinging or attachment occurs when craving for a desired object is heightened. For instance, entertaining thoughts of craving by failing to ignore them consecutively or continuously, until they are heightened to an unstoppable degree, is "clinging." In other words, it is greed (*lobha*).

b. *Ditthi-upadana,* or attachment to wrong and evil views

Annihilationism (*uccheda-ditthi*) and *eternalis,* (*sassta-ditthi*) cover all wrong views. To a certain extent, it is more difficult for intellectuals to cease a perspective which they have cherished than to give up objects of sense.

c. *Attavada-upadana,* or attachment to self or a lasting soul-entity

This clinging is the strongest attachment among wrong views because it is the belief that there is an eternal soul or self, the ego-entity.[49] The reason why the Buddha rejects the concept of a soul (*atta*) or the theory of "I" e.g (*sakkya-ditthi*)[50] is that in the conflux of mind and body, even in two consecutive moments, he could not see any indestructible soul because "being" is ever changing. In contrast to religions which have the belief that there is soul, the Buddha states that everyone is becoming due to his or her *kammic*-force because s/he is composed of an ever-changing constituent of mentality and physicality. If mind and body are separated from each other, they lose their potency and cannot function. For example, they are like a boat and boatman crossing a stream together or like a lame man leaning upon the shoulders of a blind man as they reach their destination together.

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[49] Thera, "Dependent Origination," 13.
[50] Mon, *The Essence of Buddha Abhidhamma*, 244.

d. *Silabbata-upadana,* or attachment to mere external observances, rites, and rituals

No-self or "nothing" (*anatta*) is a unique and distinguished Buddhist doctrine because it is the heart of the Buddha's teaching— it is the core of Buddhism. As mind and its factors, or the conflux of mind and body, are unceasingly moving and changing, the "being," mind and body, or procession of events (*samsara*) are free from both a microcosmic and macrocosmic soul.[51]

ix~x *Upadana-paccaya Bhavo* (clinging or attachment-conditioned by-becoming)

Interdependently conditioned by clinging or attachment, becoming is arising.

The interrelated and processive condition of clinging or attachment in nonlinearity facilitates becoming. Becoming is twofold and conceivable as two processes as follows:

a. *Kamma bhava*, or *kamma*-process

This is the accumulation of moral and immoral actions. In other words, it is the "*kammically* active side of life."

b. *Upapatti-bhava, or kamma*-resultant rebirth process

This is the *kamically* passive and morally neutral side of life, resulting in the next life which can be attained in any sphere—that of existing sensuously (*kama-bhava*), that of existing in form (*rupa-bhava*), or that of existing formlessly (*arupa-bhava*). This passive *kamma*-resultant process of rebirth is the causally interrelated association of passive worldly consciousness (*lokiya-vipaka*) of concomitants (*cetasikas*), and forms resulting from actions (*kammaja rupas*). For instance, if one performs moral *kamma*, it will

[51] Thera, "Dependent Origination," 13.

condition the rebirth-process in a happy plane; however, if s/he carries out immoral *kamma*, it will condition the rebirth-process to the *apaya* abodes.[52]

The interdependent co-arising system is concerned with the three connected and consecutive periods of past, present, and future, as well as with interdependent series and societies of the webs of events. In other words, belonging to the present life (*upadana-paccaya bhava*) here affects one's future life, and *upadana* stands as a condition for this twofold becoming of the *kamma* process or actions, and *kamma*-resultant process of rebirth.[53]

x~xi *Bhava-paccaya Jati* (becoming-conditioned by- birth)

Interdependently conditioned by becoming, birth is arising.

Birth (*jati*) is the becoming of the rebirth-process where birth means the aggregate of five appearances of mentality and physicality arising in a mother's womb at the very first moment of consciousness (*patisandhi-kala*).[54] According to the clinging actions or volitions (*tahna-upadana kamma*) of the previous birth, the clinging acts and wills of the present birth also bring about future births, either in low or high standards of life. Moreover, "beings" are heirs and heritages of what they do, as well as being bearers of their actions and activities. Indeed, their deeds are conditions, like a womb, from which they arise. One must be able to change or transform him or herself to succeed and achieve liberation by their actions or *kamma*. One's position and situation are interdependent on what one molds through the long, wandering *samsaric* night in the universe. In this interdependency of vital and consequential flux, *kamma* is the consequence of rebirth; in turn, rebirth, is the consequence of *kamma.* Both play a role in the unending sequential process of infinite potentialities and possibilities. Like the infinite energy in the universe, the

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[52] Mon, *The Essence of Buddha Abhidhamma*, 86-96, 100-103, 106-111, 245.
[53] Thera, "Dependent Origination," 14.
[54] Mon, *The Essence of Buddha Abhidhamma,* 245.

action-oriented becoming process (*kamma-bhavakammic*) is a force in which reactions follow actions with resilient energy, because *kamma* is the medium as well as potentiality for everything to exist or be possible.[55]

xi~xii *Jati-paccaya-jara-maranam soka parideva dukkha domanassa upayasa sambhavanti*

(birth-conditioned by-ageing and death, and their consequences; sorrow or worry, lamentation, pain or suffering, grief, and despair)[56]

Interdependently conditioned by birth, ageing, and death, and their consequences; sorrow or worry, lamentation, pain or suffering, grief, and despair are arising.

Because of the processive condition of birth, the inevitability of aging and death, together with the suffering of the body and mind, follows. Since "beings" are always moving along the existential wheel due to *kammic* force, death is not the final end. It should be noted that Buddhists do not believe some an external, supremely powerful entity who controls or cares for rewarding good deeds and punishing evil acts. Even the Buddha cannot save entities from their *samsaric* bond because they are *kammavadins,* or believers in the causal efficacy of actions for both good and bad. As everything in the universe is mind-made, "beings" can choose to act either morally or immorally.[57] Therewith, *kamma*, rights, and responsibilities are dynamically laid. Thus says the Buddha:

> According to the seed that is sown,
> So is the fruit ye reap therefrom.
> The doer of good (will gather) good,
> The doer of evil, evil (reaps).
> Sown is the seed and planted well;
> Thou shalt enjoy the fruit thereof.[58]

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[55] Thera, "Dependent Origination," 14-15.
[56] Mon, *The Essence of Buddha Abhidhamma*, 246.
[57] Thera, "Dependent Origination," 15.
[58] Thera, "Dependent Origination," 16.

Based on the knowledge of action and the law of causation (*kamma-vipaka*), there is no one to be blamed, including Buddha, for human ills, nor anyone to be praised for happy experiences and events because all these arise due to an individual's *kamma*. Buddhists conceive that they are not instant beings but are beings resulting from their own choices and the determination of millions of thoughts and actions. However, what the Buddha rejects is the theory or concept of linearly exclusive determination by the past because it is deemed unreasonable. It is wrong to say that all things that occur are due to past actions, because many things that happen today are interdependent on what deeds have been done in the present life. To clarify, the Buddha never says that all things are fixed, static, closed, or inevitable necessity. Moreover, free will is neither static nor a positive entity.[59]

In turn, when there are no causes and conditions, affects cease. For instance, if the cause of sorrow is destroyed, sorrow will also disappear. In this wheel of existence (*bhavacekka*), enlightened ones have the power to break the endless chain.[60] Therefore, quoting the *Samyutta Nikaya*, Thera described the *paticca-samuppada patiloma,* or interdependent co-ceasing or co-cessation:

i~ii *Avijjayaa tveva asesaviraganirodha sankharanirodho*
Through the entire cessation of this ignorance, volitional formation ceases.
ii~iii *Sankharanirodha vinnanannirodho*
Through the cessation of volitional formations, rebirth consciousness ceases.
iii~iv *Vinnananirodha nama-rupanirodho*
Through the cessation of rebirth consciousness, mentality-materiality ceases.
iv~v *Nama-rupanirodha salayatananirodho*
Through the cessation of mentality-materiality, the sixfold base ceases.
v~vi *Salayatananirodha phssanirodo*
Through the cessastion of the sixfold base, contact ceases.
vi~vii *Phassanirodha vedananirodho*

[59] Thera, "Dependent Origination," 17.
[60] Thera, "Dependent Origination," 19-20

Through the cessation of contact, feeling ceases.

vii~viii *Vedananirodha tanhanirodho*

Through the cessation of feeling, craving ceases.

viii~ix *Tanhanirodha upadananirodho*

Through the cessation of feeling, craving ceases.

ix~x *Upadananirodha bhavanirodho*

Through the cessation of craving, clinging ceases.

x~xi *Bhavanirodha jatinirodho*

Through the cessation of becoming, birth ceases.

xi~xii *Jatinirodha jara-maranam soka-paarideva-dukkha-domassaupyasa nirujjhanti*

Evam etassa kevalassa dukkhakkhandhassa nirodho hoti

Through the cessation of birth, ageing and death cease, and sorrow, lamentation, pain, grief, and despair. Thus, there is the cessation of this whole mass of suffering.[61]

Additionally, there is another method of explanation for the law of interdependent co-arising, or *paticcasamuppada,* which is called the law of causal relations, or *patthana*. There are twenty-four modes of conditionality for psychic and physical phenomena. Theravada Buddhists mostly recite this *patthana* as a meditation to discern themselves. They believe that this interrelated series of conditions or causes operate systemically in natural processes as a sanctuary to protect their own selves from all bad things, to strengthen wisdom, and to fulfill wishes. Each condition has power in conditioning and conditioned state to interactively function by producing, supporting, and maintaining becoming. The law of causal relations, or *patthana,* are: i) root condition (*hetu-paccayo*); ii) object condition (*arammana-paccayo*); iii) predominant condition (*adhipati-paccayo*); iv) contiguity condition (*anantara-paccayo*); v) immediacy condition (*samanantara-paccayo*); vi) co-nascence condition (*sahajata-paccayo*); vii) mutuality condition (*annamanna-paccayo*); viii) *inter*dependent condition (*nissaya-paccayo*); ix) powerful *inter*dependence condition (*upanisaya-paccayo*); x) pre-nascence condition (*purejata-paccayo*); xi) post-nascence condition (*pacchajata-paccayo*); xii) repetition condition (*asevana-paccayo*);

[61] Thera, "Dependent Origination," 21.

xiii) *kamma* condition (*kamma-paccayo*); xiv) *kamma*-result condition (*vipaka-paccayo*), xv) nutriment condition (*ahara-paccayo*); xvi) faculty condition (*indriya-paccayo*); xvii) *jhana* condition (*jhana-paccayo*); xviii) path condition (*magga-paccayo*); xix) association condition (*sampayutta-paccayo*); xx) dissociation condition (*vippayutta-paccayo*); xxi) presence condition (*atthi-paccayo*); xxii) absence condition (*natthi-paccayo*); xxiii) disappearance condition (*vigata-paccayo*); and xxiv) non-disappearance condition (*avigata-paccayo*).[62] These series and societies are organically interdependent to consciousness, mental factors, *kamma*, and so on.

In summary, this is what the law of interdependent co-arising shows for how "becoming or arising," including the alternative "ceasing," occurs in natural systems. The explanation goes, through the law, by using characteristics of both mentality and materiality from minute to microbe levels—from indivisibly interdependent levels of the quickest flickering moment of consciousness and mental factors to sentient and non-sentient beings. Thus, the law of *paticcasamuppada* is one of the ultimate principles of the four co-related ultimate truths which shows how sentient and non-sentient beings of nature continuously occur and cease. Non-linearly, the law functions for entities as they arise and vanish. The entities also interconnectedly co-condition each other to arise as new entities in the process. Past and present are crucial potentials for the future, which is full of possibilities—both good and bad. Nothing is isolated, fixed, static, or closed. With openness, the natural system goes on forever. Thus, "change" is the key to this law. The detailed empirical and analytical explanation of each step makes one knowledgeable about who and how animate and inanimate beings in(cluding) the universe (multiverse) are becoming and perishing.

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[62] Mon, *The Essence of Buddha Abhidhamma*, 254-256.

C. Mentality-Materiality, or *Nama-Rupa*

In the independent quality of the law of *Ahbhidamma* philosophy, mentality-materiality is important. This is the reason why I describe all sentient and non-sentient beings as being composed of mentality and physicality. Among animate and inanimate beings, "human beings" are highlighted. Indeed, a human person is nexus of interdependent entities of mentality (*nama*) and materiality (*rupa*). Human beings can be discerned through the law of interdependence because they are the interconnectedly composed nature of mentality-materiality—*nama-rupa*. Mentality, with its interdependent side of materiality, will be discussed first.

1. Mentality, or *Nama*

According to Bathanda Nandamarlarbhiwunsa,[63] the *Pali* word *nama* generally means "bending or curving to senses or aggregates or *khandha*" in having the sense of materiality itself as "all togetherness."[64] The Buddha also teaches that all the mental and physical phenomena of existing beings both animate and inanimate are composed of five groups of aggregates: i) materiality aggregates (*rupakkhandha*), an interconnected system of twenty eight societies of physicalities (*rupas*); ii) feeling aggregates (*vedanakkhandda*), consisting of pleasant physical feelings (*sukha-vedana*), unpleasant physical feelings (*dukkha-vedana*), pleasant mental feelings (*somanassa-vedana*) unpleasant mental feelings (*domanassa-vedana*), and indifferent or neutral feelings (*upekkha-vedana*); iii) perception aggregates (*sannakkhandaha*) comprised of perceptions of form, sound, odor, taste, and both physical and mental impressions; iv)

[63] Bathanda Nandamarlarbhiwunsa is the head of professor of *Ahbhidhamma* science at the International Theravada Buddhist Missionary University (Yangon, Myanmar) and Sithagu World Buddhist University (Sagaing, Myanmar).

[64] Nandamarlarbhiwunsa, *Nanm ì tabarwa tayah ko lelar chin* [Studying the Natural Law of *Nama*] (Kanmyit Kyawngtaik Dhamma Center, Sanchaung Township, Yangon: Parapaid Dhamma Distribution, August 23, 2008), Dhamma preaching file No. 10, MP3, 51:03.

aggregates of mental formations (*sankharakkhandha*) consisting of fifty mental factors (*cetasikas*) other than feeling (*vedana*) and craving (*sanna*); v) consciousness aggregates (*vinnanakkhandha*) composed of eighty-nine major and 121 minor consciousnesses.[65] Thus, *nama* is translated as mentality or mind.

Interdependently, there are two main and significant systemic societies of consciousness (*citta*) and mental concomitants (c*etasikas*) in mentality. *Citta* is defined as "consciousness of the sense" or "awareness of a sense object," while *cetasikas* are mental factors which characterize consciousness by influencing one to be good or bad by taking the same sense object (*arammana*), which is also taken by consciousness, and by sharing a common physical base (*vatthu*) together with consciousness. Consciousness and concomitants are connected to the quickest of flickering phenomenal events. In the same moment, they interdependently arise together and vanish together. No consciousness can function without mental factors, and vice versa. Therefore, mentality (*nama*) is the interdependent combination of consciousness (*citta*)[66]

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[65] Mon, *The Essence of Buddha Abhidhamma*, 228.

[66] In accordance with the four spheres or *bhumi*, consciousness or *citta* can be divided into four classes: **One**: *Kamavacara citta* is the consciousness mostly experiencing the sense sphere, or *kama-loka*. There are fifty-four *kamvacara citta*. These societies of consciousness are divided into three constituted groups: —i) Twelve immoral consciousness, or *akusala citta* comprised by three sub-constituted classes such as eight greed-rooted consciousness, or *lobha-mula citta*, two anger-rooted consciousness, or *dosa-mula cittas*, and two ignorance-rooted consciousness, or *moha-mula citta*. With them, people usually commit wicked and evil deeds that produce bad results. ii) Eighteen rootless consciousness, or *ahetuka cittas* which is classified into three related sub-groups such as seven immoral resultant consciousness, or *akusala-vipaka cittas* that arises as the evitable results of past immoral actions or *kammas*, eight morally rootless resultant consciousness, or *ahetuka kusala vipaka cittas* that arises as the inevitable results of past moral karmas, and rootless functional consciousness, or *ahetuka kiriya citta*. Noted that *vipaka* and *kiriya cittas* are *kammically* neutral and ineffective that they do not produce any *kammic* result. Consciousness without mental factors rooted-condition is called *ahetuka citta* whereas consciousness with mental factors rooted-condition is *sahetukas cittas*. iii) Twenty-four sense-sphere beautiful consciousness, or *kama-sobhana* cittas which is categorized into three sub-categories such as enormous (greater in number) moral consciousness or *maha-kusala cittas*, great (greater in number) resultant consciousness, or *maha-vipaka cittas*, and vast (greater in number) functional consciousness, or *maha-kiriya cittas*.

and mental concomitants (*cetasikas*).[67] These two connected ones—consciousness or *citta* and concomitants or *cetasikas*—are two of the four ultimate realities.

Two: The *rupavasara cittas* is the consciousness experiencing in the fine-material sphere or *rupa-loka*. There are fifteen *rupavasara cittas*. This organic society of consciousness is equally sorted into three groups—i) moral consciousness or *rupavacara kusala cittas* or five *rupa-jhana cittas* (*jhana* is mental absorption when the mind is focused on a sense object for a long time. Five combined *jhana* factors such as initial application or *vitakka* that applies the mind to the sense object, sustained application or *vicara* that examines the object again and again, joy or pleasurable interest or piti in the object, feeling or sensation or *vendana* which is composed of pleasant feeling or bliss *sukha jhana*, and neutral feeling or equanimity or *upekkha*, and one-pointedness or *ekaggata* and concentration or *samadhi*. Conceived that mind is normally not tranquil or calm but constantly unsettled by five hinderances or *nivaranas* such as sense desire, or *kamacchanda*, illwill or *vyapada*, sloth and torpor *thina-middha*, restlessness and remorse or *uddhacca-kukkucca*, and skeptical doubt or *vicikiccha*. Moreover, sense desire influences the mind to be wandering about sensuous objects to which it has enjoyed before. For instance, ill-will makes the mind anxious by taking notice of disagreeable things, sloth and torpor, restlessness and remorse, and skeptical doubt veils the mind by taking notice of disturb to concentration; ii) five *rupa-jhana* resultant consciousness, or *rupavacara vipaka cittas*, and iii) five *rupa-jhana* functional consciousness, or *rupavasara kiriya cittas*.

Three: The *arupavacara citta,* which is the consciousness mostly experiencing in the immaterial sphere, or *arupa-loka*. There are twelve arupavacara citta. This systemic organism is equally grouped into three sub-sets—i) Four *arupa-jhana,* moral consciousnesses, or *arupavacara kusala cittas*, four *arupa-jhana* resultant consciousness or *arupavacara vipaka cittas*, and four *arupa-jhana* functional consciousnesses, or *arupavacara kiriya cittas*.

Four: The *lokuttara citta,* which is the consciousness mostly experiencing in the supramundane sphere. There are equally four related path-consciousness or *magga-citta,* and four fruit-consciousnesses, or *phala cittas*. Supramundane consciousness can be obtained by arahants through insight meditation or *vipassana*. To get reach of the degree of path consciousness or *magga*, insight meditation, or *vipassana-yanika,* and tranquility meditation or *samatha-yanika* are interconnectedly necessary so that one is enlightened in wisdom stage, or *nibbana*. Mon, *The Essence of Buddha Abhidhamma*, 31-32, 38, 42, 46-47, 51, 54-57. The bolded numbers are intended for the major societies or groups comprised by the Roman numbering categories.

[67] There are fifty-two sorts of concomitants, or *cetasikas*, classified into three major groups with their related systemic and organic societies:

One: The thirteen neutral mental concomitants or *annasamana,* which are categorized by two sub-groups:— i)Seven essentials associating with *cittas* such as contact or mental impression, or *phassa*, feeling or sensation or *vedana*, perception, or *sanna*, volition or intention or *cetana*, one-pointedness or *ekaggata,* concentration or *samadhi*, vitality or psychic life, or *jivitindriya*, attention or reflection, or *manasikara* and ii) six selective particulars associating with some *sobhana* as well as with some *asobhana cittas* such as initial application or thought or conception or *vitakka*, sustained application or discursive thinking or *vicasa*, decision or determination or *adhimokkha*, effort or energy or exertion or *viriya*, rapture or interest or *piti*, wish or desire or will or *chanda*.

Two: The fourteen immoral concomitants, or *akusala cetasikas,* which are set by three sub-groups, i) A group of four concomitants, or *moha-catukka-akusala-sadharama,* headed by ignorance or delusion, or moha-avijja, lack of moral shame or impudence or *ahirika*, lack of moral dread or recklessness or *anottapa*, and unrest or restlessness or distraction or *uddhacca*. ii) A, set of three concomitants or *lobha-tripapanca-dhamma,* headed by *lobha* such as greed or attachment or sense desire, or *lobha-raga-tanha*, wrong view, or *ditthi*, conceit or pride, or *mana*. iii) A group of four concomitants, or *dosa-catukka,* headed by *dosa* such as hatred or anger or aversion, *dosa-patigha*, envy or jealousy, or *issa*, avarice or stinginess, or *macchariya*, worry or remorse or *kukkucca*, and the last three immoral, or dull and wavering concomitants, or *end-tri,* such as sloth, or *thina*, torpor, or *middha*, and skeptical doubt or perplexity or v*icikiccha*.

In speaking of and identifying consciousness, it is to be understood that it automatically includes mental concomitants. They co-arise together as one event in the stage of mind. For instance, when walking it is not the foot alone that is working but all parts of the body, such as consciousness, eyes, hands, and so on that are moving together. Indeed, each body part itself does not know what it is doing; but only consciousness, which is capable of "knowing," knows what the parts are doing." Thus, mind (*nama*) is not an existent entity, but is a "becoming" or interdependent co-arising phenomenon. It is like a melody or sound coming into being from an interconnected condition or possibility of potentialities to become a sound from a guitar. According to *Abhidhamma*, the brain is not the mind because the mind does not exist as a substance. One can conceive that when one does think, or rationalize (plan, consideration, and so on), it is, on one hand, called the brain; and when feeling emotions (hate, love, remorse, etc.), it is, on the other hand, called heart. Hence, this interrelated co-arising stage of both brain and heart is called mind. Mentality, in a higher degree, mainly correlates four aggregate groups while the

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Three: Twenty-five beautiful mental concomitants, or *sobhana cetasikas,* divided by four sub-categories, i) Nineteen *sobhana sadharana* which is associated with all beautiful consciousnesses, or *sobhana cittas,* such as faith or confidence, or *saddha*, mindfulness or attentiveness, or *sati*, moral shame, or *hir*i, moral dread, or *ottappa*, non-attachment, greedlessness or generosity, or *alobha,* hatelessness goodwill or forbearance or loving-kindness, or *adosa*, equanimity or mental balance, or *tatramajjhattata*, tranquility of mental factors or *kaya-passaddhi*, tranquility of consciousness, or *citta-passaddhi*, agility or lightness of mental factors, or *kaya-lahuta*, agility or lightness of consciousness, or *citta-lahuta*, elasticity of mental factors, or *kaya-muduta*, elasticity of consciousness, or *citta-muduta*, proficiency of mental factors, or *kaya-pagunnata*, proficiency of consciousness, or *citta pagunnata*, uprightness of mental factors or *kayujjukata*, and uprightness of consciousness or *cittujjukata*; ii) Three *virati* those connected with abstinence from immoral actions (for right action), speeches (for right speech) and livelihood (for right livelihood). iii) Illimitable mental factors, or *appamana,* which connected with 'boundless states' such as compassion or *karuna*, and sympathetic joy, or *mudita,* which are the two among the four laws of *brahma-vihara* sublime modes of living in *brahma* abode—loving-kindness, or *metta*, compassion, or *karuna*, sympathetic joy, or *mudita*, and equanimity or *upekkha*. iv) One wisdom factor, or *pannindriya* or *panna,* that connect with wisdom or insight in that it has control over the understanding of things as they really are i.e in the light of impermanence, or *anicca*, suffering and not-self, or *dukkha* and *anatta,* because it overcomes ignorance. This stage is called non-delusion or wisdom or *amoha* because it can remove the veil of delusion, or *moha* from clouding human beings' mental eyes, and cast away the darkness cast by ignorance, or *avijja*. This state is called higher wisdom and knowledgeful life. Mon, *The Essence of Buddha Abhidhamma*, 63, 65, 68, 71-72, 77, 83. The bolded numbers are intended for the major societies or groups comprised by the Roman numbering categories. Mon, *The Essence of Buddha Abhidhamma*, 31-32, 63-64.

rest of the large and systemic society of materiality aggregates functions to physicality. The nature of mind is as enormously wide as the nature of materiality in study.[68] The interdependent comprised systemic and organic societies of consciousness (*citta*) and concomitants (*cetasikas*) are also large.

Moreover, in studying mentality, six sorts of physical base (*vatthu*) on which the variety of consciousness associating with concomitants arise, transparent materiality (*pasada*) at which the sense impression takes place, and sense door (*dvara*), the entrance through which outside senses enter, are also constituted. Transparent materiality (*pasada*) is crucial because it is the continuum of related qualities which receive senses from outside. The following table shows the related process of mind.

No.	Sense base or *Vatthu-pasada*	Sense door or *Dvara*	Consciousness or Citta
1.	Eye-base or *cakkhu-vatthu-cakkhu-pasada*	Eye door or *cakkhu-dvara*	Eye consciousness
2.	Ear-base or *sota-vatthu-sota-pasada*	Ear door or *sota-dvara*	Ear consciousness
3.	Nose-base or *ghanda-vatthu-ghana-pasada*	Nose door or *ghana dvara*	Nose consciousness
4.	Tongue-base or *jivha-vatthu-jivha-pasada*	Tongue door or jihva-dvara	Tongue consciousness
5.	Body-base or *kaya-vatthu-kaya-pasada*	Body door or *kaya dvara*	Body consciousness
6.	*Hadaya-vatthu*-physical base that exist in the blood of the heart-base	Mind door or *mono-dvara* (19) *bhavanga-cittas*	Mind consciousness (79)

An explanation of the eye base (*cakkhu vatthu-pasada-dvara*) is given as an example. Mon discusses the example of striking a match on the rough surface of its matchbox, that when "the visible object is the striking element, the sense-organ is the receiving element, and the eye

[68] Nandamarlarbhiwunsa, Nanm ì tabarwa tayah ko lelar chin

consciousness is the resultant element. The eye-consciousness does not exist before or after the contact between the visible object and the sense organ; it arises just at the time of contact and then perishes."[69] Therefore, eye-transparent materiality (*cakkhu-pasada*) is, at the same time, called the eye-door (*cakkhu dvara*) both are interdependent on each other in the process of perceiving. Indeed, the five senses are the essential elements of the senses. Consciousness and concomitants are comprised according to the six sense objects (*arammana*). They are: i) visible objects (*rupa-* or *vanna-rammana*); ii) sound objects (*sadda-rammana*); iii) smell objects (*gandha-rammana*); iv) taste objects (*rasa-rammana*); v) tangible objects (*photthabba*—alternatively, (*pathavi, vayo*, and *tejo*);[70] and vi) mind objects (*dhamma-rammana*). It should be noted that when these physical bases are destroyed, no consciousness of each respective *pasada* arises.[71]

As a particularly related constituted organism of mind object or *dhamma-rammana* there are sixfold comprising five sensitive parts of organs (*pasada rupas*) sixteen subtle phenomena, or *sukhuma rupas*, eighty-nine consciousnesses, or *cittas*, fifty-two mental concomitants (*cetasikas*), *nibbana*, and concepts (*kasina nimitta*). The mind object cannot arise at the five sense doors (*panca-dvara*), but only in the mind door.[72]

Among those six, the heart-base or mental base of all consciousness (*hadaya-vatthu-bhavanga-cittas*) is crucially different. It is like a continuum of consciousness which happens during sleep. There are no actions and reactions because there is only a continuous shaking

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[69] The match is the striking element, the rough surface of the matchbox is the receiving element, and the flame is the resulting element. The flame does not exist anywhere before striking the match. When the conditions of potentialities for its arising are fulfilled, the flame arises. Mon, *The Essence of Buddha Abhidhamma*, 104-8.

[70] These are the fundamental pure elements which will be explained in the interdependent side of—physicality.

[71] Mon, *The Essence of Buddha Abhidhamma*, 105.

[72] Mon, *The Essence of Buddha Abhidhamma*, 106.

moment of *kammic* force. This heart-base or mental base of all consciousness consecutively stills in the related series of consciousnesses—birth consciousness (*patisandhi citta*) and uninterrupted life-continuum consciousness (*bhavanga citta*) are hung together with the others, and the past death moment consciousness (*cuti-cittas*). When the *kammic* momentum is stopped, the re-birth consciousness (*bhavanga citta*) ceases.[73] In this continuum, the mind-door (*mono dvara*), is also active as the nature or characteristics of mind and heart-base (*hadaya vatthu*), as are the nature or characteristics of body or physicality. This continuum characterizes the conditions of potentialities of mind-by-mind, that as the more interactive condition of mind-by-mind occurs, the more different or divine or new brilliant mind, wisdom, knowledge, thoughts, ideas, and so on arise. This new stage of phenomena arises due to an interactive quality, like how lightning comes from the interactive actions of negative and positive charges, and then the sound of thunder occurs in the sky.[74]

Interestingly, the interconnected series and web between mentality and materiality is called a "miscellaneous or mixed section." Briefly, it is the particular specification connected to physicality. It is the continuum of mind to body. This section is a summary of miscellaneous entities (*sangha*) such as feelings (*vedanas*), roots (*hetus*), functions (*kiccas*), function place (*thana*), sense doors (*dvaras*), sense-objects (*arammanas*), and sense bases (*vatthu*) It is the state of causal condition of potentialities for possibilities. This condition is indeterminacy, or *avyakata,* to determine good or bad in the relatedly subtle and initial parts of the section. It is possible for many things to arise as well as vanish. Additionally, the cognitive series (*vithi*) is also constituted as an interconnected chain of consciousness as mental processes simultaneously

[73] Nandamarlarbhiwunsa, Nanm ì tabarwa tayah ko lelar chin. A broader study of heart base or *hadaya vatthu* will be described in the coming section on physicality or *rupa*.

[74] Nadamarlarbhiwunsa, "*Nanm ì tabarwa tayah ko lelar chin.*"

to arising until the state of planes of existence (*vithimut* or *bhumi*).[75] Consequently, the related part of mentality, physicality (*rupa*) will be briefly described. In the interdependence between mentality, it is necessary to understand materiality.

2. Materiality, or *Rupa*

Materiality (*rupa*) is one of the four ultimate realities. According to Mehn Tin Mon, when translating the *Pali* word *rupa* into English, indefinite meanings such as "matter," "corporeality," "material," "body," "form" and so on are used. Among these various terms, "materiality" is the nearest appropriate meaning because it "comprises the characteristics of matter as well as those of energy."[76] The opposite of mentality (*nama*), *rupa* means the aspect of "not knowing to senses." It is explicitly and easily knowable because it is seeable, testable, tangible, audible, and smell-able. According to conventional truths, it intends to point to all forms of bodies and seeable personalities. The reason why it is named materiality (*rupa*) is because of the aspects of changeability or perishability—impermanence. Therefore, it is called the natural law of "change." Materiality R*upa,* is changed when interacting with different and opposite entities. For instance, when liquid water is heated, it changes into vapor; when cooled, it becomes solid; when heated again, it changes again into liquid or vapor.[77] Just as matter changes when being cooled or heated, *rupa,* does as well. Different forms, colors, shapes, and masses arise when lots of *rupa,* are gathered together. However, *rupa* is ultimately formless, shapeless, and massless, just like energy. In contrast to what the law of conservation of mass and energy

[75] Mon, *The Essence of Buddha Abhidhamma*, 98, 100-112.
[76] Mon, *The Essence of Buddha Abhidhamma*, 185.
[77] Nandamarlarbhiwunsa, Yuk ì tabarwa tayah ko lelar chin, (Kanmyit Kyawngtaik Dhamma Center, Sanchaung Township, Yangon: Parapaid Dhamma Distribution, July 19, 2011), Dhamma preaching file No. 008, MP3 48:10.

states that matter and energy can neither be created nor destroyed—*Abhidhamma* states that materiality (*rupa*) becomes and perishes constantly in the very short and sub-periodical (*khana*) space. R*upa* is incessantly produced out of four interdependent major sources, namely actions (*kamma*), consciousness (*citta*), heat (*utu*), and nutriment (*ahara*). Since materiality (*rupa*) only exists for a short interval what is formed instantly passes away. It is probable to say that the forming and the dissolving rates of materiality cancel each other out and make the law of conservation of matter and energy hold for aggregates. In enumerating aggregates of materiality (*rupakkhandha*) of materiality (*rupa*), twofold materiality (*rupu*)—essential or primary elements (*bhuta-rupa*) and derived materiality (*upadaya-rupa*)—is interdependently found.[78] Similarly these are also enormously systemic organisms and societies.

a. Essential or primary elements

The *Pali* word *bhuta-rupa* is also called *mahabhuta-rupa,* which means "fundamentally great essential elements of materiality." There are four fundamental and essential elements. They are described through the qualities of characteristics—*pathavi dhatu,* or earth element; *apo dhatu,* or water element; *tejo dhatu,* or fire element; and *vayo dhatu,* or air element.[79]

1. *Pathavi*
   This is the element of extension or the element of solidity, with characteristics of hardness and softness. Extension means occupation in space. Tri-dimensional extension gives rise to the idea of a solid body. The dual characteristics of hardness and softness imply relativity. For example, a rock may be said to be hard if compared with clay, but it is soft if compared to iron. Pathavi serves as a support or nucleus for the other co-existing *rupas*.
2. *Apo*
   The element of cohesion or the element of fluidity, with the characteristics of cohesiveness and fluidity. It is *apo* that makes different particles of matter cohere and holds them together. It is like the force of attraction between the

[78] Mon, *The Essence of Buddha Abhidhamma*, 185-186.

[79] Mon, *The Essence of Buddha Ahidhamma*, 186. The meanings—*pathavi* (earth element), *apo* (water element), *tejo,* (fire element), *vayo* (air element)—are generally easily conceivable when looking at the characteristics of the four basic elements, but they are not definite interpretations.

positive and the negative charges of electricity—in other words, attractive and repulsive charges. When we add a little water to flour, the flour-particles cohere into a lump; however, if we add more water, the mixture becomes fluid and flows away.

3. *Tejo*
   The element of heat or heat energy, with the characteristics of hotness and coldness. Vivacity (liveliness), maturity, hotness, and coldness are due to *tejo*. Both heat and cold are the properties of *tejo,* sharing a degree of the relativity of *pathavi*. Additionally, we feel hot when heat flows into our body and we feel cold when heat flows out of our body into the surroundings.
4. *Vayo*
   The element of motion or kinetic energy, with the characteristics of pushing and supporting. When we blow air into a balloon, the air pushes the walls of the balloon outwards, and if there is no balancing force exerted by the walls of the balloon, the balloon will burst. Remember that there is action and reaction at every point. Motion, vibration, oscillation, rotation, and pressure are caused by *vayo*.[80]

Furthermore, the word "element" is the closest appropriate translate for *dhatu* in *Pali* due to its own characteristic marks or attributes. These four fundamental elements are also ultimately formless, massless, and inseparable, but they exist together in a variety of different ratios in different entities. Each and every substance such as earth, water, wind, and so on ranging from the minutest particles to the most gigantic object in the universe or multiverses is interdependently arising out of these four elements to specific degrees. Moreover, in looking to a dust particle or the whole earth, it can be conceived that it is *avinibhoga-rupa* which contains eight sorts of *rupas*—in the qualitative predominant aspect of *pathavi* or earth element, there are *apo*, *tejo*, *vayo*, color (*vanna*), smell (*gandha*), taste (*rasa*), and nutriment (*oja*) just as in water, fire, and air. That *tejo* contains water makes it known that there is fire in water as well,[81] just as what science shows. For instance, the molecule H_2O—water—is an intensely comprised mass of *tejo,* or heat due to it being a bundle of both potential and kinetic energy. Again, in heat, the

[80] Mon, *The Essence of Buddha Abhidhamma*, 186-187. Italics are mine.
[81] Mon, *The Essence of Buddha Abhidhamma*, 195.

quality of water characteristics of flame can also be seen to the degree that it contains water vapor. It can be conceived that there are interdependently interactive relations of elemental entities between fire and water and vice versa, to become the water quality of fire or the fire quality of water.

b. Derived Materiality, or *Upadaya-rupa*

In number, there are twenty-four derived societies of materiality interdepending on four essentials. Thus, in total there are twenty-eight organisms of materiality, including the four basic elements with different properties. The following eleven are sorted out as material qualities:

1. Essential material qualities—*pathavi*, *apo*, *tejo*, and *vayo*
2. Transparent material qualities—pasada rupas, transparent materialities in the eye, the nose, the ear, the tongue, and the body
3. Material qualities of sense objects—visible form, sound, odor, taste, and tangibility
4. Material quality of sex—femininity and masculinity
5. Material quality of base—heart-base
6. Material quality of life—vital force
7. Material quality of nutrition—nutriment
8. Material quality of limitation—the element of space
9. Material quality of communication—bodily intimation and vocal intimation
10. Material qualities of mutability—material lightness, pliancy, adaptability together with the two forms of intimation
11. Material qualities of characteristics—material productivity, continuity, decay, and impermanence.[82]

Excluding the four fundamental elements mentioned above, transparent materiality (*pasada-rupas*) consists of the sensitive parts of the organs such as eyes, ears, nose, tongue, and body. They are interdependently co-existing material qualities that receive the impression of sense objects. Allow me to elaborate: the transparent materiality of the eye (*cekkhu-pasada*) spreads in the seven layers of the pupil whenever an image appears; the transparent materiality of

[82] Mon, *The Essence of Buddha Abhidhamma*, 188.

the ear (*sota-pasada*) spreads in the ring-shapes space inside the ear canal; the transparent materiality of the nose (*ghana-pasada*) spreads in the goat-leg shape inside the nostril; the transparent materiality of the tongue (*jivha-pasada*) spreads along the middle-upper surface of the tongue; the transparent materiality of the body (*kaya-pasada*) spreads throughout the entire body, wherever it is sensitive to touch—excluding hair on the head, body-hair, finger-nails, and hardened, dried skins (e.g. callouses). Indeed, senses (*pasadas*) have qualitative functions for both internal and external relations with others. Interdependently, there are five sense-objects (*pancavinnana*)—visible form, or *ruparammana* (color or *vanna*); hearable, or *saddarammana* (sound or *sadda*); smell-able, or *gandharammana* (smell or *gandha*); teste-able, or *rasarammana* (taste or *rasa*); and tangible objects, or *photthabbaramma* (i.e *pathavi*, *tejo,* and *vayo*). Remarkably, the water element cannot be felt by the sense of touch since it is very subtle. For instance, when one is putting his or her hands in water, the coolness or hotness s/he feels is *tejo*, the softness or hardness is *pathavi*, and the pressure is *vayo*.

There are two different types of sex materiality (*bhava rupa*): —female sex materiality, (*itthi-bhava*), which imparts femininity which spreads over the whole body of the female; and male sex materiality (*purisa-bhava*) which imparts masculinity over the entire body of the male. As the seat of consciousness (*mano-vinnana*), the heart-base (*hadaya-vatthu*), born of *kamma*, spreads through the blood of the heart. It is crucial to note that both mind and matter have life—the life of mind is one of the seven essential mental concomitants, and the life of *kamma*-born materiality, (*jivita-rupa*). The life of mind (*jivitindriya-rupa*) called the vital force (*kammaja-rupa*) spreads throughout the whole body. As the nutritive essence or materiality of nutriment (*ahara-rupa* or *oja*) sustains the body, it has the quality to cause either good or ill. For instance, when eating a kind of leaf or fruit, the nutritive quality can produce either nutrition or poison.

There is the limiting space, or *akasa dhatu* or *priccheda rupa,* or separate material groups (*rupa kalapas*).[83] Microscopically, just as there is space between eggs which are put in a basket, there are very tiny spaces produced between and in separate material groups by *kamma, citta*, heat, (*utu*), and nutriment (*ahara*). For instance, just as it can be seen that there are spaces between smooth bean seeds put into a transparent glass bottle, or spaces between the threads of a cloth, spaces in the human body and skin can also be seen.[84] The limiting space (*pariccheda-rupa*) is also called *akasa-dhatu,* in that "*akasa* is the space which is in itself nothingness or void or formless, and *akasa* is an element or dhatu in the sense of a non-entity or *nijiva*, but not as an existing element like the fundamentally essential element."[85]

Additionally, the interdependent organisms of intimation materiality relate to the special movements of the parts of a body (*kaya-vinnatti*) through the action of hands, eyes, legs, and so on; movement of the mouth (*vaci-vinnatti*) communicates ideas to another by means of which one understands another's intentions. Produced by the mind, they stay only for one conscious-moment. Quoting Ledi Sayadaw and the interpretation of Venerable Narada, Mon posits that the special condition of materiality—namely mutable materiality (*vikara-rupa*)—is its "peculiarly distinctive condition" as the "changeability of materiality or *rupa*."[86] Sequentially, there are the classifications of physical lightness or buoyancy (*rupassa-lahuta*) the condition which suppresses the heaviness in the body; physical elasticity (*rupassa-muduta*) the condition which removes stiffness in the body; and physical adaptability (*rupassa-kammannata*) the condition

[83] Mon, *The Essence of Buddha Abhidhamma*, 189-190.
[84] Nandamarlarbhiwunsa, *Yuk ì tabarwa tayah ko lelar chin*.
[85] Mon, *The Essence of Buddha Abhidhamma*, 190.
[86] Mon, *The Essence of Buddha Abhidhamma*, 190.

which is opposed to the stiffness of the body.[87] Additionally according to *Abhidhamma*, *Nibbana* can be implied in *rupa,* when perceived.[88]

As a concluding remark, these interdependent systemic organisms of mentality *and* materiality reveal how animate and inanimate beings are composed. These co-related systemic societies of mentality and materiality are organically constituted even in the quickest moment of consciousness of the body in materiality. Indeed, the brain is not the mind. The mind, according to *Ahbhidhamma*, is the interdependent co-arising phenomenon of the systemic organisms of both brain and heart. It must be noted that as there is interdependent co-origination via the entities of the body in the mind, so there is interdependent co-arising through the entities of the mind in the body. There is no body without the mind, and so the mind is interdependent for sentient beings. The highest degree of these interdependent web-systems or organisms nested entities are "human beings" or "persons." Therefore, the interdependent co-arising entity of both mentality and materiality is called "life" or the "organism of organisms." According to the law of interdependent co-arising, human beings can also arise as the highest state of becoming a Buddha or falling into the miserable state of an *Apaya*. Thus, the Buddhist believes that having the state of being a human being is the best chance for a divine and dynamic condition once in the world.

D. The Law of *Kamma*

In the law of interdependent co-arising, *kamma* is the key player. The role of *kamma* is crucial, nothing occurs without it. *Kamma* (or *karma* in Sanskrit), is a fundamental doctrine of

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[87] Mon, *The Essence of Buddha Abhidhamma,* 195.

[88] Nandamarlarbhiwunsa, *Yuk ì tabarwa tayah ko lelar chin* [Studying the Natural Law of *Rupa*] (Kanmyit Kyawngtaik Dhamma Center, Sanchaung Township, Yangon: Parapaid Dhamma Distribution, July 20, 2011) Dhamma preaching file No. 009 in Burmese, MP3 45:06.

Buddhism, and it is defined as "the law of moral causation." *Kamma* is also one of the four natural and ultimate truths/laws mentioned above. Literally, the *Pali* term *Kamma* means "action" or "doing." In the ethical realm, it is known as "the law of cause and effect." *Kamma* arises as three types—mental *kamma*, verbal *kamma*, and physical *kamma*. Every intentional thought (*mona-kamma*) word (*vaci-kamma*), and deed (*kaya-kamma*) is regarded as *kamma*.[89] Mahasi Sayadaw states that

> either this inequality of mankind has a cause, or it is purely accidental. No sensible person would think of attributing this unevenness, this inequality, and this diversity to blind chance or pure accident. In this world nothing happens to a person that he does not for some reason or other deserve. Usually, men of ordinary intellect cannot comprehend the actual reason or reasons. The definite invisible cause or causes of the visible effect is not necessarily confined to the present life, they may be traced to a proximate or remote past birth. According to Buddhism, this inequality is due not only to heredity, environment, "nature and nurture", but also to *Karma in Sanskrit or Kamma in Pali*. In other words, it is the result of our own past actions and our own present doings. We ourselves are responsible for our own happiness and misery. We create our own Heaven. We create our own Hell. We are the architects of our own fate.[90]

Given that all good and evil actions arise because of *kamma*, it generally means moral and immoral volitions. The volition rooted in ignorance (*moha*) greed or attachment (*lobha*), anger (*dosa*) is unwholesome while the volition accompanied by generosity (*alobha*), good will (*adosa*), and wisdom (*panna* or *amoha*) is wholesome. If one's actions are technically involuntary, unintentional, or unconscious, then s/he does not produce *kamma* because there is no volition or freewill. Free will is the most important aspect in determining *kamma*. Indeed, *kamma* is an energy event because it has forces and qualities attached to every action whereby there is an equal and opposite reaction. In the powerful supremacy of *kammic* energy, ignorance

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[89] Mahasi Sayadaw, "The Theory of *Karma*," Online Buddhist Study Guide (Buddha Dhamma Education Association and Buddhanet), accessed January 6, 2021, http://www.buddhanet.net/t_karma.htm.

[90] Sayadaw, "The Theory of *Karma*." Italics are mine.

(*avija*), the first connection of interdependent co-arising, is the chief cause of *kamma*. Freewill (*cetana*) is the sower, and feeling (*vedana*) is the reaper in this interdependent causal relation. For instance, volition and its concomitants (consciousness and concomitant other than volition) cease after performing their respective works. However, before they perish, their *kammic* property are left in the flow of consciousness, which is potential *kamma.* This will someday produce its due effect, an effect which will be reaped by the doer him/herself. In other words, action and reaction (*vipaka*) are always constituted together. They are the natural processes of cause and effect where *kamma* is like a seed while *vipaka* is like a plant—the cause producing the effect. The effect reveals the cause everywhere because the potentiality of producing its due effect is inherent in *kamma*. What one harvests today is what s/he cultivated yesterday. S/he will also reap what s/he sows today. *Kamma* itself is a law operating in its own field, without any external or authoritative intervention.[91]

Sayadaw quotes the Buddha, saying that "it is obvious from this unique case that *karmic* [sic] tendencies could not only influence our physical organism, but also nullify the potentiality of the parental cells and genes—hence the significance of the Buddha's enigmatic statement, 'We are the heirs of our own actions' as described in the books of *Lakkhana Sutta* of *Digha Nikaya*" and clarifies that

> *Karma*[92] does not necessarily mean past action. It embraces both past and present deeds. Hence in one sense, we are the result of what we were; we will be the result of what we are. In another sense, it should be added, we are not totally the result of what we were; we will not absolutely be the result of what we are. The present is no doubt the offspring of the past and is the present of the future, but the present is not always a true index of either the past or the future; so complex is the working of *Karma*.[93]

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[91] Mon, *The Essence of Buddha Abhidhamma*, 164-165.

[92] Rather than using the Pali word *Kamma*, Sayadaw uses the Sankrit word *Karma* in his article although he is a Theravada monk living in Yangon, Myanmar.

[93] Sayadaw, "The Theory of *Karma*,"

Indeed, *kamma* is not a fatalistic doctrine like mechanist, determinist, and predestinationist views of the ever-changing processes. In looking at the macroscopically interdependent causal web, beside three worlds, or *Thri Lokka*—the world of living beings (*satta lokka*), the world of time and space (*okkasa lokka*), and the world of impermanence (*sankara lokka*)—there are five natural orders or processes (*niyama*) operating in the mental and physical realms which are to be interdependently taken in account when thinking about entities. Interdependent to *kamma* which is one of the following natural processes, they are:

i. ***Utu Niyama*** – physical inorganic order, e.g. seasonal phenomena of winds and rains. The unerring order of seasons, characteristic seasonal changes and events, causes of winds and rains, nature of heat, etc., all belong to this group.
ii. ***Bija Niyama*** – order of germs and seeds (physical organic order), e.g. rice produced from rice-seed, sugary taste from sugar-cane or honey, peculiar characteristics of certain fruits, etc. The scientific theory of cells and genes and the physical similarity of twins may be ascribed to this order.
iii. ***Karma Niyama*** – order of action and result, e.g. desirable and undesirable acts produce corresponding good and bad results. As surely as water seeks its own level so does Karma, given opportunity, produce its inevitable result, not in the form of a reward or punishment but as an innate sequence. This sequence of deed and effect is as natural and necessary as the way of the sun and the moon.
iv. ***Dhamma Niyama*** – order of the norm, e.g. the natural phenomena occurring at the advent of a Bodhisattva in his last birth. Gravitation and other similar laws of nature. The natural reason for being good and so forth may be included in this group.
v. ***Citta Niyama*** – order or mind or psychic law, e.g. processes of consciousness, arising and perishing of consciousness, constituents of consciousness, power of mind, etc., including telepathy, telaesthesia, retro-cognition, premonition, clairvoyance, clairaudience, thought-reading and such other psychic phenomena which are inexplicable to modern science.[94]

Excepting *kamma niyama*, the others seem more or less unchangeable. *Kamma* itself is a law. It is powerful and independent. There are four major systemic categories of classifications in *kamma*—classification according to different functions, classification according to the priority of

[94] Sayadaw, "The Theory of *Karma,*"

effects, classification according to the time in which effects are worked out, and classification according to the plane in which the effect takes place. In enumerating each of them, the first group, "classification according to the variety of function," is categorized into four types:

1. Reproductive *kamma,* or *janaka-kamma*

Reproductive *kamma,* or *janaka-kamma,* "produces mental aggregates and material aggregates at the moment of conception as well as throughout the life-time of the individual; it produces as new existence."[95] As every birth or becoming is conditioned by past *kamma*, the dominating good or evil *kamma* from the past is influential at the moment of death. This conditioned *kamma* for the future birth is named reproductive *kamma*. Sayadaw continues:

> The death of a person is merely "a temporary end of a temporary phenomenon." Though the present form perishes, another form which is neither the same nor absolutely different takes its place, according to the potential thought-vibration generated at the moment of death, because the karmic force which propels the life-flux still survives.[96]

In this determination of the subsequent and new birth state, the "life-continua" of a person in good or evil becomes.[97] In other words, it is the rebirth-consciousness or initial consciousness, (*patisandhi*) process arising with the mental and material aggregates called body, sex, and base-element (*kaya-bhavavatthudasakas* in a new continuing life.[98]

2. Supportive kamma, or upatthambhaka-kamma

Supportive *kamma* "supports the reproductive or *janaka-kamma* as well as the effect of the *reproductive or janaka-kamma* throughout the life-time of the individual; it is not strong

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[95] *Mon, The Essence of Buddha Abhidhamma*, 166.

[96] Sayadaw, "The Theory of *Karma,*"

[97] Sao Htun Mat Win, "The Buddhist Concept of *Kamma*," in *Engagement*: Judson Research Center Bulletin 3 (December 2004): 7, 10.

[98] *Dasakas* means *decad,* which is the ten factors of the body. *Decad* is composed of four basic elements, which are *pathavi, apo, tejo*, and *vayo*, the four derivatives, or the *upadana rupa,* which are color, or *vanna*, smell, or *gandha*, taste, or *rasa*, and nutritive essence, or *oja*; and vitality, or *jivitindriya,* and body, or kaya. Sayadaw, "The Theory of *Karma*"

enough to produce a new existence."[99] Due to immediately coming close to the conceptions of the death moment, this *kamma* assists or maintains the actions of the reproductive *kamma* of an individual throughout their life, either for moral support (*kusalaupatthambhaka*) which helps in giving health, wealth, happiness, and so on, or for immoral support (*upatthambhaka kamma*) which assists in giving pain, evil, sorrow, misery, and so on.[100]

3. Obstructive or counteractive *kamma* or *upapilaka-kamma*

Obstructive or counteractive *kamma* "weakens, interrupts or retards the fruition of the reproductive *kamma*."[101] Opposing supportive *kamma*, it disturbs, delays, and weakens the results of reproductive *kamma* for either good or for ill. For instance, although one was born in a luxurious condition, the subject of an ailment can prevent them from enjoying his/her goodness. That is slowness to feel or enjoy living in good actions is called obstructive *kamma*.[102]

4. Destructive or *upaghataka-kamma*

Different from the others, destructive *kamma* eradicates and exterminates, either for good or ill, by producing events that cancel out other events. In other words, within the law of the *kammic* potential energy field, a powerful opposing past action seeks an opportunity to unexpectedly take place in the operation of one's life. For instance, though a person dies in a sudden, unexpected, and unpleasant way, in accordance with destructive *kamma* s/he is re-born into a blissful life.[103]

The second category of the classification, according to priority of effects, is also classified into four:

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[99] Mon, *The Essence of Buddha Abhidhamma*, 166. Italics are mine.
[100] Sayadaw, "The Theory of *Karma,*"
[101] Mon, *The Essence of Buddha Abhidhamma*, 166.
[102] Sayadaw, "The Theory of *Karma,*"
[103] Sayadaw, "The Theory of *Karma,*"

1. Weighty *kamma*, or *garuka kamma*

Weighty *kamma* is so strong and serious that no other *kamma* can stop it in the coming life. Its functions cannot be destroyed by the other *kamma,* so that it will definitely cause results, whether good or bad. There are five weighty (*pancanantariya*) *kamma*, which are immediately effective: "creating a schism in the *saints* or *Sangha*, wounding a Buddha, murdering arahants, matricide, and patricide."[104] Additionally, a permanent wrong view, or *niyata-micchaditthi,* is also considered weighty *kamma,* so a life which is lived according to the ways of mindfulness, or through heavenly or holy ways of life is a weighty force for getting away from four hellish abodes of *apaya* forever.[105]

2. Proximity or death-proximate *kamma*, or *asanna-kamma*

Proximity or death-proximate *kamma* is the *kamma* which is taken as an immediate performance or remembrance on one's deathbed so that one is reminded of his/her good or bad deeds, realized in the last moment and provisional in determining the future birth in either a good or bad state.[106]

3. Habitual *kamma*, or *acinna-kamma*

Habitual *kamma* is the *kamma* which is performed regularly. When one recollects his/her habits, habitual *kamma* becomes second nature, tending to happen and to be remembered all the time because of one often taking it into his/her mindset.[107]

4. Reserve or cumulated *kamma*, or *katatta kamma*

Kattatta literally means "because done." What actions one has done with forethought but

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[104] Mon, *The Essence of Buddha Abhidhamma*, 166-167. Italics mine.
[105] Mon, *The Essence of Buddha Abhidhamma*, 166-167.
[106] Sayadaw, "The Theory of *Karma.*"
[107] Sayadaw, "The Theory of *Karma.*"

forgotten afterward are included. In other words, it is unspecified that an action is done but forgotten soon.[108]

The third group of the classification of *kamma,* according to the time in which the effects are worked out, is sorted into four categories. They are:

1. Immediately effective, or *ditthadhammavedaniya kamma*
2. Subsequently effective, or *uppapjjavedaniya kamma*
3. Indefinitely effective, or *aparapariyavedaniya kamma*
4. Defunct or ineffective, or *ahosi kamma*

There is a process (*javana*)—thought-impulsion which lasts for seven-thought moments in each *samsaric* life. The effect of the first thought-moment, being the weakest, may be reaped or experienced in the present life, which is called immediately effective *kamma*; if it is not reaped, it is called defunct or ineffective because it cannot operate in the second birth. However, the effects of the intermediate thought-moments of such *kamma* may also take place at any time until one attains *nibbana*; these are known as indefinitely effective *kamma*. The effect of the seventh weakest thought-moments harvested in subsequent birth is called subsequently effective *kamma*.[109]

The final classification of *kamma* is according to the plane or sphere in which the effect takes place, and it is sorted into three groups. They are:

1. Evil actions, or *akusala kamma,* which are effective on sentient plane or *kammalokas,* in which eleven sentient planes—six celestial, one human, and four deplorable—are included.

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[108] Sayadaw, "The Theory of *Karma.*"
[109] Sayadaw, "The Theory of *Karma.*"

2. Good actions, or *kusala kamma,* which make actions effective in the sentient plane, excluding the four deplorable planes.
3. *Kusala kamma* which are effective in fine material spheres, or the realms of form (*rupa-brahamalokas*) and non-material spheres (*arupa-brahamalokas*).[110]

Summarizing this section, *kamma* can be understood as an "interactive field of force." This *kammic* field of force is the interactive potentiality which has the power to cause many possibilities both good and ill. In other words, it is the power to determinate, to become, and to cease, either good or bad. Due to this interaction, or *kamma*, human beings can attain good or evil lives. Since there are three interactive relationships between and among each other—physical interaction, verbal interaction, and mental interaction—it is crucial to take into consideration the kinds of mind or consciousness with whom one interacts, as well as in what ways. Moreover, as love (*metta*) is action, Buddhists' understanding of love can be seen in these three ways. Since they express love in these three ways, they can also express hate in these three ways. Interdependent on these relations, the fruition of good or evil occurs in the degrees and layers of the planes. Since *kammic* power (as potential energy) is the source of life, nothing is impossible through human efforts combined with wisdom and compassion. Human beings are thus in the best causal and processual condition to choose and become either a Buddha or Beast. That there is the transformative power in *kamma,* even negative actions can be outbalanced by positive actions, enabling human beings by insight, wisdom, or knowledge to become new, fresh, and affluent—not only in the present life but also in the future. The connected systemic organisms of *Nibbana* and *Samsara* will now be discussed due to the interactive qualities of *kamma* and the natural and conceptual laws mentioned above.

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[110] Sayadaw, "The Theory of *Karma.*"

E. Nibbana and Samsara

Interdependent to *kammic* interactions, the interconnectedness of *Nibbana* and *Samsara* is crucial for Theravada Buddhist concept of continuing creation. Because of the interactions of *kamma*, *nibbana* and *samsara* are interdependently and supportively existent.

Nibbana is one of the four ultimate realities mentioned above. Etymologically, this *Pali* word of *Nibbana* is varied. The word *Nibbana* is derived from the Pali verb *nibbanti,* which means "to be extinguished" or "to be blown out." Thus, contextually and metaphorically, *Nibbana* signifies the extinguishing of the worldly "fires" of greed (*lobha*), hatred (*dosa*) and ignorance or delusion (*moha*) involving a perfect deliverance from all sufferings.[111] Moreover, *Nibbana* combines two *Pali* words—*ni* and *vana*. *Ni* means "negation of" or "departure from," and *vana* means "craving" (t*anha* an alternative rendering for *vana*). Grammatically, the latter word *vana* is also combined with another word, *va*—*va* and *vana* become "vvana" which in turn becomes *ni* and *bbana*. So, this combined word *Nibbana*[112] is interpreted as "departure from craving," while *Samsara* as "the wheel of existence."[113]

Sayadaw U Dhammapiya describes *Nibbana* as a transcendental and unconditional state. It is the state of the "unconditioned" which enlightened beings have realized through means of purification. In other words, *Nibbana* as a transcendental element (*dhamma-dhatu*) is abyssal. In

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[111] Nyanatiloka, *Buddhist Dictionary: Manual of Buddhist Terms and Doctrines* (Colombo: Frewin & Com., Ltd, 1956), 98.

[112] The Pali word *Nibbana* in Sanskrit is *Nirvana*. Raimundo Panikkar describes the Sanskrit verb *niva* as meaning "'to be extinguished or "'to be consumed"'— in transitive mode, as a fire goes out, or a flame is exhausted for lack of fuel. The root word *vana* means the wind, yet the wind not only extinguishes fire, but tempers heat, so that etymologically, *Nirvana* means also "'refreshing"' or "'pleasant'." Buddhists conceptualize the combined word *Nirvana* (nir+vana) as "'freedom from desire,"' which has the meaning of complete "'extinction of greed, extinction of hate, extinction of delusion'." Raimundo Panikkar, *The Silence of God: The Answer of the Buddha* (Maryknoll, NY: Orbis Books, 1989), 37 quoted in Saw Hlaing Bwa, "Freedom and Person: Bridging the Gap between Buddhism and Christianity" (M.Phil Thesis in Ecumenics), University of Dublin, 1997), 50

[113] Sayadaw U Dhammapiya, *Nibbana in Theravada Perspective* (Chino Hills, CA: Triple Gem Publication, 2004), 19-20.

this transcendental state, no substantial process of cause and effect or empirical element remains. *Nibbana* is thus beyond the thirty-one planes of existence. The state of absolute *Nibbana* is similar to an enlightened being who reaches or enters the state of the attainment of cessation (*nirodhasampati*) in the formless existence of the immaterial plane or *arupavacara* existence. Quoting Ledi Sayadaw, he posits that *Nibbana* is seeing the nature of impermanence (*anicca*), the suffering of five aggregates (*dukkha*), and the insubstantiality of phenomena (*anatta*), which occurs from moment to moment. Philosophically, it is the goal of liberation or enlightenment. Realizing *Nibbana*, according to conventional truth, is regarded as the present. *Nibbana* consists of no time and no locality, in that time and space is relative by mind—the mind counts time as duration and space as locality. Thus, the concept of time implies a close and mutual relationality between time and consciousness.[114]

Nyanaponika Thera, holding the concepts of *anatta* (viz. no self or egolessness) and deliverance in Theravada Buddhism, explains that *Nibbana* is the state of absolute peace or perfect deliverance from all *dukkha* such as rebirth, aging, death, and all miseries in life which result attachment. Further, it is the state of cessation (*bhava-nirodha*) of existing through the destruction of greed, hate, and delusion. He continues to point out that even though *Nibbana* is fully unexplainable, it has both a negative sense of meaningful nature, as mentioned above, and a positive nature, with the designation of the profound, the true, the pure, the permanent, the marvelous, and so on (SN 43). However, *Nibbana* is not in the extreme poles of eternalism (*sassata-ditthi*) and annihilationalism (*uccheda-ditthi*)[115] because it is not a bare extinction or a

[114] Dhammapiya, *Nibbana in Theravada Perspective*, 82-86, 90-91.

[115] Eternalism, on one hand, is the belief in a permanent substance or entity, whether conceived as a multitude of individual souls or selves, created or not, as a monistic world-soul, as a deity of any description, or as a combination of any of these notions. Annihilationism, on the other hand, asserts the temporary existence of separate selves or personalities, which are entirely destroyed or dissolved after death. Nyanaponika Thera, "Anatta and

camouflage for an absolute zero. *Nibbana* is an emphatic rejection of the extremes of existence (*atthita*) and non-existence (*natthita*).[116]

Nibbana can be viewed theoretically and practically—it has an explanatory principle and an experiential realization. This unconditioned *Nibbana* can be realized by discernment through the law of *paticcasamuppada*. Though *Nibbana* has a single intrinsic and unique nature of peacefulness (*santi-lakkhana*), there is a twofold view categorized by seven diverse types—realizing *Nibbana* with aggregates still remaining in the present life (*Sa-upadisesa-Nibbana*), and experiencing *Nibbana* without the remaining aggregates (*Anu-patisesa-Nibbana*). Quoting Ledi Sayadaw's explanation based on the Three Basket or the *Ti-Pitaka*, *Dhammapiya* explains the seven types of *Nibbana* as follows:

1. *Nibbana* with the wrong view, or *Micchaditthi-Nibbana*

   This is a *nibbana* immediately related to the happiness rooted in the five sensual pleasures. As hedonists accept that the sense pleasures are the highest happiness, the absence of pain affirms such a belief, and attracts people to chase and desire such happiness and pleasures. This concept and practice are called *Nibbana* with the wrong view.

2. *Nibbana* in the present life, or *Sammuti-Nibbana*

   This *Nibbana* is the situation of escaping from worldly dangers such as wars, storms, famines, diseases, and enemies. People accept this in accordance with the

Nirvana: Egolessness and Deliverance," in *The Wheel Publication* 11 (Kandy, Sri Lanka: Buddhist Publication Society BPS Online Edition, 2008): 1. Accessed January 11, 2020, https://www.what-buddha-said.net/files/library/wheels/wh011.pdf.

[116] Thera, "*Anatta* and *Nirvana*," 14.

conventional statement that this peace and tranquility is identified as *Nibbana* in the present life.

3. *Nibbana* in the moment, or *Tadanga-Nibbana*

   This *Nibbana* is found in the state of peace and happiness generated by removing defilements (*kilesas*) from moment to moment. It is a temporary abstinence from unwholesome deeds (*akusal-kamma*) such as killing (*panati-pata*), stealing (*adinadana*), and wrong livelihood (*micchajiva*). People conceptualize that the processual situation of restraining their actions in torturing and disturbing others is a happy and blissful state. It is named *Nibbana* in the moment.

4. *Nibbana* with suppression of defilement or *Vikkhambhana-Nibbana*

   This *Nibbana* is identified by the state when one is immersing into *jhana* states, in which people detach from the five sense desires—sensuous desire (*kammcchanda*), ill will (*vyapada*), sloth and torpor (*thina-middha*), restlessness and worry (*uddhacca-kukkucca*), and skeptical doubt (*vicikiccha*), as well as other unwholesome states or hinderances. This initial state of realizing *Nibbana* is titled *Nibbana* with suppression of defilement.

5. *Nibbana* with extinction of defilement by destruction, or *Sammuccheda-Nibbana*

   This *Nibbana* is conceived as the level of being uprooted from all defilements through the way of knowledge, or the complete extinction of defilements. This state of peaceful *Nibbana* with extinction of defilement by destruction is synonymous with Sa-*upadisesa-Nibbana,* or the complete destruction of defilements (*Kilesa-Nibbana*).

6. *Nibbana* with extinction of defilement by tranquilization, or *Patipassaddhi-Nibbana*

This *Nibbana* is realized in the present life. It is the state when one lives with supramundane consciousness of the fruition knowledge (*arahatta-phala citta*). This state of experiencing peacefulness and blissfulness is *Nibbana* with extinction of defilement by tranquilization.

7. *Nibbana* with full extinction of defilements, or *Nissanna-Nibbana*

   This *Nibbana* is the final and ultimate reality, or true *Nibbana,* with the fulfillment of the requirements of *Nibbana*—the complete extinction of defilements (*Sa-upadisesa Nibbana*) and the full extinction of existence (*Anu-patisesa-Nibbana*). This absolute peace (*santi-sukha*) of the final *Nibbana* is, in other words, the absolute cessation of defilements or suffering because of craving, or the Four Noble Truths, or *Nirodha-sacca*. All the sixfold base, objects, and functions—including consciousness—cease in this final and ultimate state of *Nissanna-Nibbana*.[117]

In looking at the related and processual states of these different types of *Nibbana*, the interdependent organism of *Samsara,* or the web or wheel of existence, is found to be connected. When carefully observing the processual degrees of the states of *Nibbana,* so called blissfulness is actually meaningless when removed from sufferings. With a mutual argumentative position, *Nibbana* cannot be completely peaceful, but interconnectedly mixed with suffering. For instance, there is suffering for the one who is seeking *Nibbana*. *Yogis* are painfully distressed and detaching mentalities and materialities in order to experience every state, including the ultimate *Nibbana*. In this sense, *Nibbana* and *Samsara* are theoretically and practically linked according to the discerning way of attaining *Nibbana*.[118]

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[117] Dhammapiya, *Nibbana in Theravada Perspective*, 95-99.
[118] Dhammapiya, *Nibbana in Theravada Perspective*, 99-102.

Furthermore, *Nibbana* arises interdependently with the aggregates. In a broader sense, one can consider that *Nibbana* and aggregates are not separated from one another but the five aggregates are not directly *Nibbana* again because the element of *Nibbana* can be attained by the enlightened being. In other words, this means that "as soon as an enlightened being enters *Nibbana*, the absolute state of *Nibbana* spontaneously takes place in *Pri-nibbuta* for that individual, or more precisely the element of entity. The position of enlightened being is considered to be a transcendental state as the element of *Nibbana* entity."[119] In observing the process of *Nibbana*, *Nibbana* and the five aggregates exist relatively. *Nibbana* cannot arise out of nothing, but arises out of the interconnected web of five aggregates. Thus, *Nibbana* exists with/in *Samsara*. *Dhammapiya* quotes the *Bhikkhu Buddhadasa,* stating that

> *Nibbana* and *samsara* exist together in this fathom-long body of ours. If we have not yet attained perfect *Nibbana*, we continually switch back and forth, sometimes in *Nibbana*, sometimes in samsara. Whenever we take our sensory perceptions and concoct the sense of me-and-mine, we are in samsara. When we overcome our addiction to ignorance (*avijja*), we will experience a *Nibbana* that is infinite, changeless and eternal.[120]

Moreover, *Nibbana*, the transcendental element or transcendental entity (*Dhamma-dhatu*) does not go beyond absolute peace. As ultimate reality, it exists as the deathless element. The experiential realization of *Nibbana* goes through the equal relatedness of the theory and practice of wisdom or enlightenment (*magga-phala-nana*). This is the liberation through spiritual wisdom which involves insight. This process of *Nibbana* is called *tanhakkhaya dukkhakkhayo, dukkhakkhaya nibbanam,* which means "interdepending on the cessation of craving, the cessation of suffering takes place"; interdepending on the cessation of suffering, *Nibbana* arises.

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[119] Dhammapiya, *Nibbana in Theravada Perspective*, 103.
[120] Dhammapiya, *Nibbana in Theravada Perspective*, 106.

Note that the final *Nibbana* never reverts to *Samsara* because it is permanent.[121] By avoiding the two extremes of annihilationism and eternalism, the Buddha sets the Middle Path (*Majjhimma Patipada*) or the Noble Eightfold Path (*Ariya-atthangikamagga*), that it is neither to compromise nor to make an admixture between the two extremes, but to transcend the mutual opposition between them.[122] Known as the Middle Way, the Noble Eightfold Path is composed of three sets of wholesomeness: for Morality, there is right speech, right action, and right livelihood; for Concentration, there is right effort, right mindfulness, and right concentration; and for Wisdom, there is right understanding and right thought.[123]

As an additional note of this section, the process of *Nibbana* can be seen in two ways—transcendentally immanent and immanently transcendent. Because *Nibbana* exists with/in *Samsara,* so does *Samsara* exist with/in *Nibbana*. Practically speaking, *Nibbana* cannot be attained without *Samsara*; theoretically speaking, *Samsara* cannot be meaningful without *Nibbana*. In regards to the *Nibbana* which is attained while remaining with aggregates in the present life, one, in an initial state of *Nibbana*, has the potential to practice good deeds such as generosity (*alobha*) love or peace (*adosa*), and wisdom (*amoha*) especially in the condition of the human sphere, so that s/he can, through such constructive energy afford to go forward with his/her practice to experience the final and ultimate *Nibbana* without remaining aggregates. When becoming an enlightened individual, one can completely see the interdependent causal web of *Samsara* so that, by detaching or ceasing the processual and causal series of *Samsara*, an

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[121] Dhammapiya, *Nibbana in Theravada Perspective*, 110-111, 106.

[122] Y. Karunadasa, "The Buddhist Critique of *Sassatavada* and *Ucchedavada*: The Key to a Proper Understanding of the Origin and Doctrines of Early Buddhism," in The Middle Way, vols. 74&75, 1999-2000, posted on July 11, 2004 (The Buddhist Society of UK): accessed January 11, 2021, https://www.budsas.org/ebud/ebdha263.htm.

[123] Hla Myint, "Buddhism as a Philosophy of Life," 88.

enlightened can arise according to the law of *paticcasammupada*—in the way of ceasing (*patiloma*) and in the way of arising (*anuloma*). By carefully observing the process of the seven types of *Nibbana*, two poles can be seen. So-called *Nibbana* with the wrong view, rooted in greed (*lohbha*), hatred (*dosa*), delusion (*moha*), and ignorance (*avijja*) which leads to destructiveness, is found on one hand; and on the other hand, *Nibbana* with complete destruction of defilements, which leads to constructiveness, is revealed. By immanently transcending, wisdom (*vijja*) or enlightenment or liberation occurs.

F. Summary and Evaluation

Theravada *Abhiddamma* is called "A Philosophy of Life"[124] which shows how "life" is an endless process of the arising-existing-perishing phenomenon. Systematically, the study of the ultimate realities begins at the minutest and quickest flickering event or moment of consciousness, the first ultimate reality. *Abhidhamma* is thus grounded on event-thinking and relationality. Although the method of constructing *Abhidhamma* philosophy is empirical analysis, there are also theoretical, practical, philosophical, and spiritual influences.

According to the law of *paticcasamuppada*, the natural system is a process in non-linearity as well as an interconnected causal web, an organic system of systems. The causal web is comprised of related series and societies in co-relationality. In the causal web, entities are interdependently and organically constituted even on a minute level. In other words, the law of *paticcasamuppada* can be called the Theravada Buddhist concept of relativity. Due to the concept of relativity, Theravada Buddhists conceive of time and space as existing relative to mind. Together with mentality-materiality, *kamma*, and *Nibbana*, the systemic process series and

[124] I take this term from the Theravada Buddhist scholar Hla Myint.

societies of interdependent co-arising is full of complexity, including uncertainty with many possibilities.

In accordance with relationality, mentality and materiality are interdependently co-originating. They are enormously systemic series and societies. Each mental and material entity, entity is organically comprised and constituted because every entity, even the most minute entity of consciousness, is analyzed in detail. No substance but interdependence, events, and sequential web-events are found. Nothing is separated or isolated, but everything, either good or bad, is interdependently co-arising and vanishing.

Kamma is one of the ultimate truths and the key doctrine of Theravada Buddhism. *Kamma* is actually an interactive field of force. If one conceives of love as action, *Abhidhamma* explains what love is or the way love is by *kamma*—verbally (*vaci-kamma*), physically (*kaya-kamma*), and mentally (*mano-kamma*). By these means one can feel or know what love is. Potentially it is the key function to become good or bad, hard or soft, supportive or destructive, and so on, in relating to other laws (*niyama*) by interacting in various and numerous ways of the *kammic* dimensions. In other words, the *kammic* field of force can be called a transformative field of energy. Indeed, the freedom of choice or self-determination is crucial.

In looking to reality, *Nibbana* is an interdependent entity co-arising out of the co-relationality of mentality and materiality, through the law of *paticcasamuppada*, and with/by *kammic* interactions. In other words, all entities in *Abhidhamma* exist in togetherness. This process of togetherness is their nature. Every entity, either good or bad, is interdependently co-arising due to *kammic* interactions out of the natural togetherness. According to the Buddhist concept of relativity, if one does good *kamma*, the world will be full of goodness; if not, then badness will be influential because they are relative. However, one will notice how good

consciousness and its concomitants are greater than bad, so that the world is still influenced by goodness. When observing the two poles in the process of *Nibbana*, even the *Nibbana* with wrong view is still being covered by the word *Nibbana*. Even though this situation is conditioned by a higher degree of worse things, one can say that the mode and sense of *Nibbana*, at least, still exists. Thus, Theravada Buddhists practice the dissemination of *Metta* to eighteen directions of the universe or multiverse, including the worst or evil sphere (*Apaya*) among the thirty-one spheres. This can imply that the *Nibbana* element exists like a womb.

Continuously, as an evaluating and summarizing remark, I elicit the most attractive qualities of process thought and Theravada *Abhidhamma* to conceptualize and conceive of a theology of continuing creation in each different and respective domain. These qualitative realities are persuasively and strongly existent to the building of the bridge of a theological friendship.

1. The Concept of Continuing Creation in Process Thought

Continuing creation or creativity in process philosophical theology is unique among theologies of creation. The seven-day creation of Genesis is clearly conceivable through the process interpretation of a continuing creation because it gives the clearest explanation for it. What is more, it is the most advanced interpretation for continuing creation for the following reasons.

a. The quality of relations

"Relation" is crucial for process thought. Because of relations, continuing creation occurs, which is explained as a living and moving life. Every creature in the world, both living and non-living, comes to exist because of the quality of relations. Nothing from the micro to the

macro level occurs separately with/in the world. Each and every moment is living and moving continuously as a relational moment. Indeed, the human person is a relatedly constituted living organism of interconnections. Relation functions with/in, betwixt, between, among, and beyond all creatures. This means relations matter, from the minute neural connections of mind and body to macro world including extraterrestrial worlds and even beyond our universe. Thus, the world is an interconnected web—in whom we live and move and have our being, as stated in the Bible (Acts 17:28). The wholeness of the world is relatedly constituted by related many-ness or a multiplicity of parts. Many systems and societies are organically interconnected as a wholeness. Due to these "relations," the whole is meaningful because of its parts and vice versa. Unless there is "relation," no creation happens at all. Due to the quality of relations, the world is openly and endlessly continuing, and creatures are continuously transforming. This continuing creation matters because of nonlinear connections.

b. Panentheism

The process theological view continuing creation also includes panentheism. In process thought, God indwells with/in, betwixt, between, among, and beyond the created world. Because of relations, s/he is transcendentally immanent as well as immanently transcendent with/in world. In other words, God is always relatedly working with/in the creatures which are his/her co-creators with/in the endless process of creation. What it means is as the Bible says: "Truly, truly, I say to you, whoever believes in me will also do the works that I do; and greater works than these will he do, because I am going to God (John 14:12). These relations are organically familial. In this familial ground of interconnections, the God of process thought is thus personified. The "person" of God is intended as a "personally relational being"—meaning of love—which is everlastingly existing with/in his/her creatures as relational energy. Love as

relation is also explored as eternity and purity within process philosophical theology. With/in this ground of relationality and dynamicity, creatures become relationally divine beings. This interconnectedly constituted phenomenon also reveals the quality of self-decision and self-responsibility where the past relatedly conditions the present toward what may happen in the future. Thus, the present is the most crucial and authoritative, and the future is open and full of potentialities. In this relatedly self-authoritative life, every creature has the right and responsibility to choose, do, and take on. In other words, it is the dignity of each human person alongside every other being to be created and crowned with/in the image of God of relationality, namely wisdom and compassion. Therefore, the power here is relationally persuasive as well as responsive. It is softly powerful. Due to the degree of relational choices and actions, creatures can be hard, soft, bad, good, and so on.

c. The nature of God

In process thought, God has two related natures—the primordial and consequent natures. The former one is relatedly abyssal, which is to say that not all his/her unfathomable nature is known. Although there is an unknown primordial part, its related part (viz. the consequent nature of God) makes known his/her nature—in continuing creation. God is theologically unveiled as two connected dimensions—mental and physical poles. In this way, "God is love" becomes meaningful because creatures can feel, see, say, think, and touch within internal and external relations as in the relation between the baby and placenta with/in a mother's womb. With/in the interconnection of the two natures, God and the World are also supportively meaningful between each other as seen in the Lord's prayer: "Our Father who art in heaven, hallowed be thy name, thy kingdom come, thy will be done on earth as it is in heaven….," (Matthew 6:9-13). Indeed, the organically relational way is what Whitehead finds meaningful, so that every creature may

find its own related identity and value to be recognized and respected by him or herself and by others. Differences are the beauty and attractiveness of the co-creating God. Moreover, differences and dignities are also divine and dynamic because they are his/hers, hand-made for the kins-dom of the co-creating God in the Garden of Eden. In fact, according to process thought, the Christian Trinity God is to be conceived as organically relational, as the Trinitarian relational God the parents, the child, and the holy spirit. This God is a *perichoresis*—internally they share a relatedly common ground and externally they have relatedly different stances of each respective identity.

2. The Concept of Continuing Creation in Theravada *Abhidhamma*

The idea of continuing creation as seen in the law of *paticcasamuppada* is interesting. The highlighted qualities are the most attractive for why one can conceive the concept of continuing creation although they are expressed and explained in different ways and terms, context and content, beliefs and boundaries, thoughts and teachings, strategies and societies, and structures and systems of the East.

a. The interactive field of *kammic* forces

Paticcasamupada explains how sentient and non-sentient beings come to be. The theory of *kammic* interaction is the core of the law. *Kamma* functions in the role of "interactions" with/in various dimensions. By *kammic* interactions, pure fundamental *dhatu* ("elements") are interactively aggregated to become solid, hot, bad, good, fluid, elastic, supportive, and so on. There are no substances—only the *kammically* interactive aggregates, societies, and systems exist in this world, and all the worlds in the past and the future. All animate and inanimate beings are changing in causal net of arising-existing-vanishing. Life is thus an interdependently

constituted event. Arising as human beings among other creatures, animate and inanimate alike, is the most prominent position because of humans' high degree of interactive past good *kamma* entering into the present life. It is the human person who can become an Enlightened One. Therefore, by being centered on the human being, the *Abhidhamma* discerns natural laws because the human being is the best dynamic aggregated condition—full of freedom to do and to be either good or bad. The two interdependent sides of *nama* (mentality) and *rupa* (materiality) should also be analyzed. Buddhists first start analyzing from the minutest and quickest interdependent flickering moment of mental activity called consciousness. It is discerned that the present is the most important condition for the future. Based on one's freedom of choice and decision, the kind of mind or consciousness and concomitants are crucial, as well as with whom and in what way(s), are crucial for determining *kammic* activity. *Kamma* is felt, seen, thought, and touched *mano kamma,* ("mentally"), *vaci kamma* ("verbally"), and *kaya kamma* (physically). All good or bad things happen because of one's own *kamma* so that s/he is responsible for them.

b. *Nibbana*

Nibbana is one of the most important realities of Theravada Buddhism. Theravada *Abhidhamma* describes two main *nibbanas—Anupadisesa-nibbana* ("absolute" *nibbana*), which is attained by Buddhas and arahants after death; and *Sa-upadisesa-nibbana,* which is realized while living in the present life. Although they are related, the former one is unknown and not explained. Buddhists never talk about the former one but focus on attaining the latter one in their present lives. In a sense of interdependence between them, the latter *nibbana* is realized through and with/in the *kammic* interactive levels betwixt, between, among, and beyond realities (and beings). *Nibbana* is conceived as a transcendent *and* immanent reality, which is full of peace and tranquility. Holding the concept that all things, whether good or bad, hard or soft, hateful or

loving and so on, are the products of mind, *Nibbana* is experienced by discerning the natural laws. It is also ultimate and pure. *Still*, their daily lives are crucially and carefully kept in mind. In other words, the mind is the most divine and dynamic center to be taken care of all the time, because even *Nibbana* arises through the interactive field of *kammic* energies in the law of *paticcasamuppada*. *Nibbana* as *metta dhatu* ("element") arises from the interdependent hive of the mind; furthermore, it is disseminated to all sentient and non-sentient beings in eighteen dimensions of the world—from the highest celestial abodes to the lowest miserable abodes in the conditioned human life. *Metta dhatu* has the characteristics of attractiveness, supportiveness, elasticity, fluidity, hardness, and softness. It is also practiced and experienced as the power of wisdom and loving-kindness in daily lives. The one who knows *Abhiddhama* and its practices is called "The Enlightened One," or the one who is full of wisdom.

c. *Nibbana* and *samsara*

The interdependency between *nibbana* and *samsara* is meaningful because they relatedly support each other. Without *samsara*, *nibbana* cannot be interactively arising and experienced; without *nibbana*, *samsara* is meaningless. *Samsara* is not cyclical but a spiral, so that one will or will not have a rebirth according to his/her own *kammic* interactive potentials in the law of *paticcasamuppada*. Therefore, *samsara* is also a divine and dynamic condition where *Abhidhamma* is being practiced to attain *nibbana*, to be enlightened, and to disseminate wisdom and loving-kindness to all animate and inanimate beings in the thirty-one abodes of the world, which include those beings designated according to their degree of consciousness—beings with only mental bodies (like *Brama*), both mental and physical bodies (like humans), and only physical so-called physical bodies (like rocks).

3. Building the Bridge between Christianity and Theravada Buddhism

In such a bridge, the relational quality of process philosophy serves as the foundation. Only through this process-relational philosophy, the same foundations—the quality of relations in process thought and the interactive field of *kammic* forces—build the bridge of—continuing creation. A connection is found in the betweenness of similarities. Indeed, Theravada Buddhists can affirm continuing creation because continuing creation simply means that new things and new relationships are being born in every instance, and that is the heart of what *paticcasamuppada* means—interdependent co-arising. In this regard, the word "arising" is the same as "creation" because new things are always occurring in every moment through "cause and condition." Through this central Buddhist term of "cause and condition," new relations are always arising—continuous things arising out of the previous things. Therefore, the Christian doctrine of continuing creation and Theravada Buddhist's *paticasamuppada* are bridged.

4. Building a Relational Bridge of the Trialogue: Christianity, Natural Science, and Theravada Buddhism

On the foundation of organically process-relational philosophy, the three different domains of Christianity, Natural Science, and Theravada Buddhism are analyzed to build a bridge called "continuing creation." The common meeting point of the trialogue is "the quality of relations." The Christian doctrine of creation is interpreted as the co-relationally becoming of creatures out of the related, potential ground of creativity. The cosmic and biological evolution of contemporary science also shows the interactive co-evolving process of energy. Again, *paticcasamuppada* analyzes how realities are interdependently arising and vanishing with/in an open and endless process of interconnected causal conditions. The agreement of the three is that

all non-living and living beings are coming to exist in interrelatedness. Due to the deepest connections of the three, they are relationally co-indwelling cousins.

CHAPTER SIX

CONCLUSION AND APPLICATION

A. Conclusion

This dissertation has argued that *creatio ex nihilo,* or creation out of absolute nothingness, has been a historically problematic doctrine with/in the Christian tradition; then, it defended the more ecologically useful concept of *creatio continua* as a means to the ameliorate of the global crisis. After tracing the concept through period when Christianity was born and through the thoughts of some early church fathers, it was defended within three relatively disparate traditions, from the foundation of Whitehead's process-relational philosophy: Christianity; Natural Science; and Theravada Buddhism.

Chapter One started with a critical argument against *creatio ex nihilo*. I argued that it was neither the belief of Judaism nor of the Patristic Fathers (broadly conceived). The concept was an unoriginated and misinterpreted work of a few rushed, unthoughtful, and narrow thinkers among the church fathers. The concept was an attempt to argue against Greek Platonism, Dualism, Gnosticism, and Marcionism. This unorganized thought spread through the new-born Christianity and gradually became rooted in the space of some Christian thinkers. What is more, it was argued that *creatio ex nihilo* has in fact been the main source of many philosophical and theological problems. I criticized the fixed account of creation out of absolutely nothingness for its molding of a robotic God—which is to say that there is only One creator who created all things by Himself from machine-like systems and structures to the mental models which have excluded and separated others, all of which are predicated upon coercively unilateral power. As a

result, God would be responsible for all evils in the world. Additionally, the concept of *creatio ex nihilo* has served to promulgate a multitude of evils. Due to these reasons, I asserted that *creatio ex nihilo* caused problems in its meeting(s) with Theravada Buddhism which has no concept of a creator God who alone created all things.

Chapter Two provided an initial defense of *creatio continua*. I traced the original background of Christianity and described how *creatio continua* was the original conception of creation. Moreover, the importance and influence of the Alexandrian and Antiochene schools for the early Christian theologians and church fathers was described. The former was metaphysical and metaphorical while the latter focused on literary or factual and substantial readings and thinking about the Bible and belief. The church fathers from the Alexandrian tradition move forward with an interactive way of encountering other faiths. They constructed a harmonious way of living together respectfully and with recognition when practicing Christian belief in that age. They also carried down the theological legacy—the belief of continuing creation which gave birth to the concept of God as the co-creator and the co-suffer, as well as its interconnected concepts for learning to live together with others. In a special way, Christianity found a common place through continuing creation when encountering Theravada Buddhism.

Chapter Three discussed continuing creation based on Whitehead's process-relational philosophy. I briefly introduced process philosophy and theology before explaining creativity in Whitehead's thought to develop a Christian theology of continuing creation. Creativity, the constituted One and Many, was explored consecutively with its interrelated components to find that it was an interconnected complex condition out of which animate and inanimate beings are becoming. Prehension, with the meaning of "relation," was examined as the key player which functioned in the role of relating betwixt, between, and beyond itself, themselves, and others for

open and endless becoming. Self-organization is the characteristic process of creativity. The process God is a living creature co-indwelling with the World—the primordial and consequent natures of God. Additionally, I interpreted a Christian process-relational theology of continuing creation in relation to the interrelated God of Love, or the Trinitarian-Relational God of Love in which/whom all creatures are becoming, moving, and living together with God and others. We found here that the powerful point of process thought was the relational quality which enabled us to build a bridge. Through the quality of inter-relationality, continuing creation was connected to Natural Science. I opened an organically relational door of bridging to the boundary of Natural Science to conceive continuing creation in a supportive view because it was also the related ground of Whitehead's metaphysics.

Chapter Four explained a theology of continuing creation in natural science. As the foundation of this dissertation was process-relational philosophy, the evolutionary process of science was easily understood vis-à-vis Whitehead's thought. In fact, there exists an inseparable and deep connection between Whitehead's metaphysics and Natural Science. I have assumed that the methods and theories of science are interconnected. Together with the interrelatedness of methods and theories, I explored cosmic and biological evolution. With the ground of Einstein's relativity, the uni-multiverse was shown to be evolving, including the four fundamental forces, almost fourteen billion years ago. Related to cosmic evolution, biological evolution has been occurring with various dimensions in an open universe. Information was described as the communicative agent in science. Non-living and living organisms were examined as energy. The characteristics of self-formation were found in the evolutionary process. Indeed, continuing creation was not a scientific but a Christian term. However, related to energy (symbolized by $E=mc^2$), evolving things and the phases of science from primeval explosion until today (plus

future) were similar with/in the framework of creativity, the interconnectedly processual condition of potentialities, out of which non-living and living creatures were continuously becoming forever. Due to the analogy of my argument, there was an important relationship between them that they are not *identical* nor are there complete differences. In similarities, they are relationally interconnected. In differences, they are organically identified each own identity. For instances, Christianity, as theistic identity, holds God concept of relationality in person or personified God whereas Natural Science the common ground of both theistic and atheistic find respective positional identity, and Theravada Buddhism's conceptual stance is anatta or non-self (there is no personally theistic concept).

Also, the strong point of process thought was the relational quality which enables us to go beyond and bridge between East and West. Through the quality of inter-relationality, continuing creation was organically connected to Theravada Buddhism. Thus, the concluding part of this chapter built a bridge between science and Theravada Buddhism.

B. Application and Implementation

This dissertation is primarily intended to be applied for the interfaith society in Myanmar which is built out of multi-racial and multi-religious communities. Specifically, the Myanmar Institute of Theology (MIT), the leading theological school in Myanmar, has a unique interfaith dialogue program with the International Theravada Buddhist Missionary University (ITBMU) in Yangon. Although MIT is a Baptist theological school, it is also an educational institution for both theological and liberal arts programs for multi-racial, multi-religious, and multi-denominational students. I will use it for my teaching ministry. This dissertation will also effectively help and enforce for such students the need to learn from each other to build a harmonious society.

Since education is the most powerful force for transforming people, mindsets, and systems, the present work will be a primary material for creating syllabi and curricula. For Christian students, this dissertation will open different insights for looking at and criticizing their own perspective. They will see their concept and belief of *creatio ex nihio* oriented thinking which is not relevant and causes problems when meeting Buddhists. At the same time, they will have a spirit of consideration to renew their concepts of God and creation. Consciousness and courage to immerse themselves into *creatio continua* will gradually persuade them to form organically relational models. Moreover, their worries of losing their Christian identity will melt away into a more authentic Christianity. Their quantity-centered Christian mission will change into quality-centeredness: "conversion of one religion to another" will change into "conversion one's religion." They will find their neighbors and interact with other faiths.

This dissertation is also resourceful for conducting seminars and conferences in Christian institutions and churches. Churches in Myanmar are built on the top-down *creatio ex nihilo* concept and the patriarchal Asian culture. They make the church system more like a pyramid that oppresses women, children, and nature. For instance, the Kachin Baptist Convention's organizational system is still hierarchical and unjustly oppresses women, precluding equal leadership in ordination. Leaders from these institutions are crucial but they have been trained and rooted in the old concept. However, it is seen that the complex and nested web of Kachin living systems such as interrelated racial and descendental systems, ways of thought, life-styles, naming systems, and so on are seen compatible with process thought.

This dissertation will help trainers or resource persons for those seminars and conferences develop new insights. They can illustrate the causes and effects of both *creatio ex nihilo* and *creatio continua* so that trainees will easily unveil and reconsider their old concepts which need

to change into choosing to hold the concept of *creatio continua*. Believers or church members are also important for changing systems. Adult fellowship, Christian home worship services, youth fellowship programs and so on are the place where this conceptual orientation can be implemented. Youth from junior high, junior church school worship services, and other youth programs are also a good ground where this concept can be planted for the Christian legacy. Primary and kindergarten children are also to be cared for in light of *creatio continua*. All these groups provide good soil in which to plant the seed of *creatio continua* by creating suitable church school lessons. Of course, families and homes are the very first schools in which to introduce *creatio continua* to children because the primary view of looking at the world is taught with them.

This dissertation may also provide wisdom for colleges and universities. Scholars and professors will have a unique view for regarding the organically relational thought of the three constituted boundaries of Christian view of the world, Natural Science, and Theravada Buddhism. It will provide new insights to students and scientists alike. Scientists who are engaged in Einsteinian science will find their work enriched by the notions of a Christian concept of *creatio continua* and the Buddhist view of the world. This dissertation will help them become more open to see, create, search, and discover in their experimental and laboratories. It will be a resource on the bookshelves of scientists, philosophers, and theologians.

This dissertation is also a torch for political thinkers and government leaders to create ecologically oriented governing systems and structures for their countries. By reading it, world leaders will be enriched to lead the world in such a way as to build a better world. They will realize that neither the Western or Eastern view of the world alone is sufficient to save the world. Political interactions based on a mechanistic, Newtonian way of thinking will only create

competition, leading to the continued suffering and death of countless person around the globe. Theses merciless interactions can be counter balanced and overcome if we move toward a view of *creatio continua*. Due to the revelations of the organic thinking of *creatio continua,* co-operation with/in competition is discernable as crucial in our age.

As economics and politics are tightly related partners, this dissertation is also a readable a valuable resource for eco-political leaders because they are mainly world policy makers. As they are finding the way for the world's survival, their meetings and conferences need to be organically-oriented. Any living or non-living entity is not left in their thought while talking about it. This dissertation will give a certain knowledge to help them liberate themselves from economicsm which is rooted in a mechanistic world view and causes the economic rape rooted in greed. They will be able to develop a more ecologically oriented economics. Eco-politicians will have a more enriched view of the world based on this similar and relational view of these three major groups of people in the world.

This book is also useful for artists to create ecological performances and presentation. For instance, musicians can compose songs in the light of this concept of continuing creation for ecological reconstruction and peace awareness of the world. Moreover, homes and families can also practically handle, their daily household chores and relationship in values and respects to every animate and inanimate beings. For instance, water in a kitchen or plants in a garden can be related and used with respect and value as ourselves.

Science is one of the most powerful and useful realities for all human beings regardless of faith, race, religion, and country. As such, it is not to be exploited by the elites. This dissertation will help scientists and elites see and think for the sake of the oppressed and have-

nots. Moreover, science will lead to an interactive liberation for living and non-living creatures so that they organically indwell with/in the world.

Theravada *Abhidhamma* is the teaching of Buddha about how life is interactive. Indeed, its empirical and analytical explanation views reality as an organically interdependent organism. Since *Abhidhamma* is scientific as regards the concept of interdependence, practitioners of *Abhidhamma* can be interdependent with other different concepts for mental and physical co-arising. Since nothing is permanent, desire for permanently holding everything—including thought and power—is wrong. For instance, "Burmanization," or Burmese nationalism, and several Burmese military coups in Myanmar, are wrong according to the teaching of *Abhidhamma*. They are rooted in the mechanistic thinking and greed.

This dissertation is a sample of authentic interfaith or interreligious works for peace-building. It challenges interreligious workers, teachers, scholars, and students to go and work deeper. No peace-building is possible through interreligious works without going into its deeper level because these works can lead to popularity for the sake of projects and money. If it is, the interreligious works and teachers are only lying to the world. Additionally, process thought is also a relevant philosophy to see the world in this Einsteinian scientific age of globalization regardless of faith and religion. Moreover, this dissertation will also help the reader find a philosophical connection between East and West and be enriched by each to solve the world's problems.

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